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ABSTRACT

This report offers a comprehensive global view of future directions for teacher education. The first section discusses factors indicating the need for change. Education is seen as an agent of social change with various national approaches having common concerns and facing similar key issues to be resolved. In the second section, changes and responses in teacher education to societal concerns are considered. Among the major issues for resolution are the need for new approaches to teacher training, the career development of teachers, and the need for support services. Recruitment and selection of teachers is critically important worldwide, and the initial preparation of teachers and their continuing professional development are seen as key factors in improving education at all levels. Section 3 deals with the means of response to the need for change. Pre- and inservice training are discussed with a focus on the importance of an interdisciplinary approach to teacher education. Incentives and barriers in inservice education are considered along with different modes of inservice education. The final section discusses the importance of evaluation for program improvement, accountability, and the selection and promotion of teachers. (JD)

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FUTURE DIRECTIONS FOR TEACHER EDUCATION

Trends, Needs and alternatives relating to Inclusion of New Content Areas in Teacher Education

by Phillip Hughes

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FUTURE DIRECTIONS FOR TEACHER EDUCATION

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1. FACTORS INDICATING THE NEED FOR CHANGE

Education is one of the key agencies through which world societies seek to channel and direct the responses to the major areas of social change. Education has always had a dual cultural role: as an agent of cultural conservation and as an agent of cultural change. Because of the increasing dimensions of change, the tensions between the two aspects of that role are particularly high. Clearly societies cannot stand still in the face of social and technological problems and challenges: nor can they respond unthinkingly and risk destroying the very values which provide cohesion and meaning for them.

Unesco programmes and budgets in recent years have emphasised a number of issues recognised as being important to the future of the member countries, individually and collectively. These include:

- World peace and understanding
- The environment
- Population education
- Nutrition
- Drug abuse and its prevention
- AIDS and its prevention
- Work-skill development
- New information technology
- Parental education
- Cultural development
- Life skills

Several of these relate directly to the Unesco charter: all of them are key elements in societal development. They are thus crucial to education and place a direct demand on teacher education. If education is to take note of these issues, they must be a priority concern for teacher education, partly in terms of their incorporation as new content into the curriculum but equally in terms of their implications for teaching approaches and methodologies.

Unesco has launched a member of initiatives in recent years to meet these challenges. These initiatives are related to programmes such as *The Educational Sciences and Their Application to the Revival of the Education Process Synthesis* and *Policies and Methods for the Training of Educational Personnel*. Under the former, the Unesco objective of most direct relevance reads - 'encouraging the renewal of the content and methods of education, taking account of current education tasks and requirements and the new resources and aids available.' (Unesco Medium-

Term Plan, 1984-89). As we have seen, the current tasks and requirements are an ever-expanding list, while the new resources and aids available, while potentially useful instrumentally, have themselves become one of the tasks. The New Information Technology, for example, is not just a new means of handling and communicating information but claims to set a whole new agenda for education.

The programme on educational personnel also relates strongly to this area, and it includes a variety of activities aimed at the "improvement of the training of educational personnel with a view to responding to the specific needs of Member States and to hastening the introduction of innovations into their education systems." (Approved programme and Budget of Unesco for 1986-87, para. 04310). One of the first initiatives under this emphasis was the 'Inter-Regional Seminar on the Implications for the Pre-service and In-service Training of Teachers of Incorporating Into Curricula New Content', held in Brasilia in November 1987. This seminar built on the work done in two previous meetings, 'The International Symposium on Interdisciplinarity in General Education', held in Paris, May 1986 and the seminar at Pattaya, Thailand on 'Enhancement of Quality of Life and Environment: An Interdisciplinary Seminar', in December 1985. The link between the new content and interdisciplinarity is deliberate: the new content areas are essentially interdisciplinary, and the assumption is made that their inclusion in the curriculum will necessarily involve schools in that type of approach. This, of course, carries a further and very important implication. If teachers in schools are to adopt an interdisciplinary approach, then both pre-service and in-service education must use such approaches. Hard-won experience in education has shown the unreality of recommending the adoption of different approaches, but doing so by traditional methods. The introduction of new content of the type specified here, involves also the introduction of new curriculum and teaching approaches at both school and teacher-training levels.

This identification of teacher education is both a necessary and a previously neglected force for educational change. Education systems of a variety of kinds in a variety of different societies have proved themselves to be very conservative in their responses, not in a political sense since the phenomenon is observable in quite different political settings, but in the tendency to moderate and blunt the thrust of externally initiated change, and to adopt it only in cosmetic ways, ways which retained the essential aspects of earlier approaches. Change from outside schools may be initiated in a variety of ways: by legislative requirements, by new syllabus patterns, by new examination formats, by the provision of incentives, by new resources. All of these have been tried at different times without achieving fundamental results. Unless the behaviour of teachers is changed, the essence of the classroom pattern remains. Yet we know that teachers' patterns tend to reproduce the patterns of their own educators. A necessary point

of intervention into this process is then to alter the patterns of teacher education, if real change is to be achieved.

The link between patterns of education in schools and the education and training of teachers was developed as a theme by Beeby in the book which he wrote to sum up the experiences of working with education systems in many countries, developed and developing, in the course of his professional career, which included a substantial period with Unesco.

Beeby in his book, *The Quality of Education in Developing Countries*, developed what he called "a starting point for a body of genuine educational theory". (Beeby, 1966, p.4.) His hypothesis, in brief, was that an educational system aiming at quality has a distinctive sequence of development, passing through recognizable stages which might be abbreviated in duration but not avoided entirely. While conscious of the oversimplification involved, Beeby described the determining factors of these stages as being the general education and the professional preparation of the teachers.

The stages of development are described as follows:

I) **Dame School Stage**

A stage where the teachers have a very poor general education and little or no professional preparation, where the syllabus is sketchy and poorly defined and the emphasis is on completely mechanical, rote performance in the three R's, without going beyond memorization of relatively meaningless symbols to the reality they represent. This is a poorly organized formalism, associated with poor standards of attainment. The educational system as such is almost non-existent, consisting simply of a collection of schools with little unity of purpose or organisation.

II) **Stage of Formalism**

In this stage the teachers still have a poor general education, but have had a period of training. The schools are highly organized and have a rigid syllabus to which teachers adhere closely. There is strong emphasis on the "one best method", on the set text-book and on external examinations. The teachers' formal training is their one security since their general education may be little better than they expect to give to pupils and they thus prefer a closely defined schedule with emphasis on rote-learning in the three R's. There is a rigorous discipline applied in the classroom and this is accompanied by a close system

of inspection of the teachers. In general, such teachers lack the confidence necessary to try unexplored pathways.

> "The essential condition of good, active pupil-oriented teaching is that the teachers must have a sense of inner security ... this sense of security comes only when the gap in general education between teacher and class is wide enough." (Beeby, 1966, p.60.)

III) Stage of Transition

In stage III, teachers have a better general education, probably completion of secondary education, and have also had professional training in some special institution. The additional security felt by the teacher will permit a less formal atmosphere with more pupil-initiated activity and questioning. The official syllabus remains as the controlling agent but is more permissive. The text-book is still fixed, but is enriched by supplementary readers.The syllabus is wider, although its main emphasis is still on the memorization of facts. Within the narrow limits set the teaching will be effective, but lacking in recognition of emotional and aesthetic values. External controls will still be of great significance in the organization of the schools.

IV) Stage of Meaning

Here the teachers are well-educated and have a good professional preparation. The goals of education are more widely conceived.

> "The essence of stage IV, as its name implies, is that meaning and understanding play an increasing part in the pupils' day, and memorizing and drill, while still remaining, become subservient to them. Since passive understanding is thin and narrow, the child is encouraged to build up, by his own mental activity, the intricate web of relations that constitute real meaning; in other words he is taught to think." (Beeby, 1966, p.67.)

In this stage, more attention is paid to the individual, there is a relaxed atmosphere frequently accompanied by more physical activity as a manifestation of increased mental activity. These internal changes are accompanied by a relaxing of external controls, as in the lessening importance of external examinations and a lessening of the emphasis on inspection. The emphasis is on professional co-operation rather than dictation of content or method.

It may well be that we are in process of developing still another stage, stage V, the Stage of Capability. In this stage we require not only that students have a substantial body of knowledge and skills as in stages II and III, not only that they possess an understanding which gives meaning to that knowledge and skills, but that they develop a capability to use their knowledge, their skills, their understanding, in applications to both familiar and novel situations.

It has been a major effort, world-wide, which has seen so many countries move from Stage I through Stages II and III. In most situations we can now see various mixes of II, III and IV, with the balance moving to the upper end of the scale. No system anywhere would claim to be entirely at stage IV, still less at stage V. To do this, on a system-wide basis, is to require quite new levels of achievement and capability from students and, in turn, from teachers.

That there is a substantial need for change in educational systems is apparent in many countries. In Australia each state has made at least one attempt. These papers produced in various states, may have different titles, but the emphasis is a common one, namely, how should education respond to a future of continuing change?

A variety of initiatives at the national level has taken up the same theme. The Commonwealth Schools Commission has explored this issue in a number of publications, including *Schooling for 15 & 16 Year-Olds,* (CSC, 1980) and most recently, *In The National Interest,* (CSC, 1987). The Australian Government sponsored a special review committee which published *Quality of Education in Australia* (Karmel, 1985).

At the international level the same interest is evident. Japan has established its National Council on Educational Reform. Its terms of reference are given as follows:

(a) Transition to a Lifelong Learning System.
(b) Reform of Elementary and Secondary Education.
(c) Reform of Organisation and Management of Higher Education Institutions.
(d) Sports and Education.
(e) Reform for Coping with the Changes of the Times.
(f) Educational Administration and Finance.

(NIER Newsletter, 1986)

Korea likewise has established a National Council for Educational Reform in 1985. It was to report to the President and has, as its brief, to develop proposals for the reform of Korean education at all levels. The United States has had a number of reports at the national level, one of the most strident and dramatic being *A Nation at Risk*, (National Commission, 1985).

Britain, after a number of reports at the national level, has proposed maj r curriculum and organisational reforms for education. The Thatcher Government immediately on its election in 1987, announced its intention to develop a National Core Curriculum, with compulsory coverage of mathematics, English, science, foreign languages, history, geography, technology and religion. (*The Guardian*, 8/4/87, P.1.) This has since been enacted in legislation.

Nor has this concern been limited to industrialised countries. China adopted in 1986 its seventh Five-Year Plan. This confirmed the role of a National Education Commission, first proposed in 1985, to have jurisdiction over all education programs in China except for military education. Education was conceived as the major initiative towards China's Four Modernisations. (Central Committee, 1985, p. xv.)

At the other end of the scale many individuals have published influential studies on the same themes. They include Adler (1985), Goodlad (1985), Hargreaves (1982) and Sizer (1984). These are notable for a combination of an intensive study of the nature of individual schools with an emphasis that these schools exist in a society with universal forces at play.

The universality of this concern m[illegible]at it transcends minor differences within and between countries. The basis of the proble[illegible]xperienced by schools transcends differences in their structure and organisation, differences in curriculum form and teaching pattern, differences in system bureaucracy, differences even in the government of societies. That is not to say that these factors are irrelevant or need not be considered. It is that the issues which must be borne in mind are fundamental issues affecting all our societies. For this reason, one of our continuing efforts should be to discuss the real factors behind the changes to which we are to respond.

This universality of recognition of a fundamental problem is encouraging, but is no guarantee of solution. As mentioned, reforms of education have always proved difficult, and among the major difficulties in failing to achieve desired purposes are those involved in changing teacher behaviour. In considering changes as fundamental in nature as those involved in this exercise, it is salutary to consider the failures of much simpler reforms even when accompanied by significant planning and effort. A case in point is the partial failure of the reforms in mathematics and science programmes introduced in Europe and USA in the 1960's. These reforms involved changes of content and approach of a substantial kind, but only within the context of existing school subjects. They were accompanied by much more professional approaches to curriculum design and development than had operated up to that point, and this involved the development of high quality teaching materials. Many teachers had a substantial

involvement in the design of the courses and of the teaching materials. The results were not negligible. There were improvements in problem-solving skills in mathematics, for example, and knowledge levels remained constant, but what did not eventuate were the substantial changes in understanding and in attitude that had been hoped for. Changes in content occurred, and particularly changes in terminology. Yet the more fundamental changes in mathematics and science understanding which were at the centre of the curriculum purposes did not eventuate. This partial failure, in a relatively straight-forward area, shows the difficulty of planning for change in more complex interdisciplinary areas of the kinds we have identified.

It is useful to enumerate some of the common concerns in the various national approaches, since these will represent key issues to resolve.

- Education is perceived by most people, including students and their parents, as instrumental in nature, i.e. of value primarily in helping to achieve practical ends. Pre-eminent among those practical ends for most young people is to obtain suitable work. With changes in employment structure resulting from technology, there are now many fewer opportunities for full-time employment for young people. This process is likely to continue to accelerate with further technological change. With the connection between employment and education less obvious, students find themselves staying longer at school but seeing less immediate benefit from it. This is one major factor contributing to increased dissatisfaction with schooling.

- A further major uncertainty identified by many young people is the fear of war, particularly of nuclear war, which they see as a likely destroyer of our civilisation. Most young people indicate that they feel powerless to do anything about this threat. Again, they see education as being unconcerned with and irrelevant to this problem.

- Young people now spend much longer periods in school, willingly or unwillingly. The period at which they will begin to earn incomes, and to make decisions relating to life directions, is necessarily postponed. Yet, increasingly, young people reach physical maturity earlier and are capable of commencing sexual relationships which, by the circumstances, are unlikely to be long- lasting. Issues such as this are rarely dealt with by schools and where they are so included, this tends to be in a technical mode, taking little account of the important moral values involved.

- Issues such as drug abuse are commonly encountered by young people, but schools deal inadequately, if at all, with such issues.

- For the above-listed reasons, and because young people feel that schools treat them impersonally and without respect, they see schools as being increasingly irrelevant to their interests and concerns.

The reasons listed here are some of the common features which many countries are trying to address by social and educational reforms. These reasons also relate closely to the issues identified by Unesco as being important to take into account in teacher education programmes. It is not a remote and academic requirement but an urgent need to recognise and deal with a fundamental problem, and one of universal interest.

The case put forward here, is that educational reform of a fundamental nature must involve not just changes in the content which teachers include in their work, but changes in their teaching approach and attitudes. This is not something which can be achieved by instruction, however powerfully backed by legislation or system requirement. It requires a developmental process involving teachers in a reconceptualisation of their task: that can come only from new patterns of pre-service and in-service education.

2. CHANGE AND RESPONSE IN TEACHER EDUCATION

A. Taking Stock of the Situation

The 40th Anniversary of Unesco was an appropriate time to take stock of the situation in the sector of teacher education. It was also a time to define and agree on priorities for the period ahead. The last 40 years have seen profound changes and developments. No one at the beginning of that period could have predicted the situation either in social terms or with respect to education. It would be equally futile to try to predict the future, even for a period as short as ten years. Yet there was agreement on the crucial needs as revealed both by the present situation and clarified by the human and social values which were held in the region. This must be the basis for statement of priorities.

The present situation is a mixture of both problems and possibilities. There are many concerns but there are also substantial strengths on which we can build. The Asia-Pacific Region currently has over three billion people, some 64 per cent of the world population in its 31 countries. Of that massive population 86 per cent live in developing countries. A significant advance, however, is recorded with respect to population growth with the annual growth rate decreasing from 2 per cent per annum to 1.6 per cent per annum in recent years. A high

proportion of the total population is under the age of 15, some 35 per cent or one thousand million people being in this age group. In the years ahead the proportion of population under 125 will decline and that population bulge will work its way through. Traditionally the Asia-Pacific population has been predominantly rural and still some 72 per cent can be classified in this way. Urbanisation, however, is proceeding rapidly largely through concentration in a few mega-cities so that that rural population will be 57 per cent of the total by the year 2000.

The Asia-Pacific Region is particularly diverse. It includes the largest countries in the world both in terms of geography and in terms of population. It also includes some of the smallest. It includes land-locked countries surrounded by massive mountain ranges and island countries scattered over the immensity of the Pacific. It includes a substantial range of political ideologies, of religious affiliations, of cultural traditions, of stages of economic development. Some groups of countries have had universal primary education for many years, other groups have 80 per cent of their relevant population receiving primary schooling, and others range between 20 per cent and 60 per cent of their primary population in schools. Adult literacy rates also vary for the different countries from approximately 26 per cent up to 90+ per cent.

South America and Africa while geographically so different, present many of the same problems. Population growth is still high but the rate of increase has stabilised. This still means that a very high proportion of the population is of school age. Urbanisation is a powerful factor, with a rapid growth of large cities and an increase of people living on city fringes with temporary housing and substantial problems of access to education.

The Arab States are different again, showing major differences in economic conditions, depending on the occurrence of oil. The region as a whole is industrializing at a rapid rate and many countries import labour to permit this to occur at a rapid rate. These are generally transient workers rather than migrants. As in other areas a major problem occurs with the tension between the demands for scientific and technological expertise, required by industrialization and the wish to retain cultural and religious values and traditions.

All these regions have seen substantial advances. While the size of the age-group for primary education increased substantially in the period 1960-86 the numbers in school increased even more rapidly. In spite of this development the goal of universal primary education (UPE) which was set in 1960 to be achieved by 1980 is a reality for very few countries with another group now approaching it. The problem of drop-out from primary schools is still a major concern with some countries reporting proportions between 50 per cent and 80 per cent of the intake dropping out before they have completed. Particular groups suffer additional

disadvantages. For example, female students are frequently under-represented and rural education is still a significant problem.

In secondary education and tertiary education we find the same pattern of significant advances accompanied by major concerns still needing resolution. Thus, for example, there has been a large attendance growth in secondary education but for most countries only a small proportion still receive such education. Equally significantly, only a small proportion of those continuing on from primary schools are involved in technologically-based or vocational education. Precisely the same points can be made about tertiary education with respect to both numbers and emphases.

As the educational systems of the countries have grown, the numbers of teachers have shown similar increases. In general terms the overall shortages of teachers which were a feature of the 1960s and to a lesser extent in the 1970s, have now been overcome. There are, however, substantial exceptions to this, particularly with respect to specific areas such as mathematics and science teachers. The major current emphasis in teacher education is not so much on increasing numbers as on improvements in quality. The occurrence of substantial curriculum change and the certainty of further development, modifications in the process of assessment and the recognition of new needs with respect to school, and community relationships, are three of the areas which emphasise the need for qualitative improvement.

There are also factors which are beginning to make an impact on staff development needs for teachers in schools and educational personnel in general. Three of these factors deserve special attention. One is the growth of knowledge, especially in the area of technology. The second is the growing complexity of education systems and their stronger inter-relationships with government in general. This demands more sophisticated and more specific administrative skills and expertise. The third factor in change is the recognition that staff in higher education institutions likewise require special staff development to meet the needs of their own system and of society more generally. The assumption that specialised academic expertise is sufficient can no longer hold.

The educational issues are not merely issues for schools. There are currently 550 million young people of school age who are not in school. This is an increase of 100 million for this group from just 20 years ago. In addition to this group, we have at least 1 billion illiterate adults and this number too has increased substantially in the past two decades. These are severe social problems in themselves but it is because of their association with so many other social problems that it takes on particular urgency. Raja Roy Singh speaks from his enormous experience of Unesco in making the following comment.

"Illiteracy is invariably associated with deprivation and socio-economic under-development. Countries with over half their adult population illiterate also stand at the low end of other scales of socio-economic indicators. Typically, with very few exceptions, these countries have:

- infant mortality rates of over 100 per 1,000 live births;
- one-half to two-thirds of their children undernourished;
- widespread endemic and communicable diseases;
- one-third to one-half of their population without access to clean drinking water;
- half or more of their people with a household income below the poverty line or the minimum needed for meeting essential needs.

A full analysis of the literacy situation is handicapped by lack of data but two groups of illiterates are readily identifiable. The first group comprises illiterate adults living in the rural areas. Recent estimates indicate that rural literacy rates are 10-30 percentage points lower than for urban areas. In the rural areas, the incidence of illiteracy falls more heavily on the most vulnerable section of the population, namely, the rural poor, thus compounding the other social and economic disadvantages to which they are subject.

The second group comprises women. Of the estimated 618 million illiterates in the developing countries of the region, some 60 per cent are women. A reference to Table 23 will show that as long as there is illiteracy, there will be more of it among women than among men. (Table not reproduced here.) The difference is resolved when illiteracy is completely liquidated. The rate of women's literacy determines quite decisively the overall level of literacy in a country; a high rate of literacy is a positive influence on socio-economic development generally and on family life, children's education, health and nutrition, in particular." (Singh, 1986, pp. 89, 90.)

Raja Roy Singh's comment on illiteracy also highlights the situation with respect to education of girls and women. As has been mentioned there is substantial under-representation in many countries for women in education and this has very serious implications both for the individuals who are disadvantaged and also for their families since, as has been pointed out, the overall literacy level depends very closely on the rate of women's literacy.

Population growth and illiteracy are two of the major problems which affect the current situation. The chief problem is unemployment and particularly the high levels of youth unemployment. Almost all countries identified this as a major issue. The fourth problem area is the existence of substantial tensions and dislocations in social cohesion in the countries. This can be linked with rapid technological change and an associated decline in cultural transitions. It can also be linked with the disadvantages experienced by those in rural areas and the continued undisciplined growth of urban populations, through migration. Whatever the causes, most countries identified the need for moral education, for an education in values to promote both social cohesion and individual development.

It would be misleading, however, to indicate that the situation is dominated by problems. As is apparent throughout this discussion it also features very real possibilities for desirable developments. Technological change is a case in point. While it is often discussed in terms of its harmful social impact it is, by its nature, a creation by people, a creation aimed to solve particular problems. As such it has transformed opportunities for travel, increased dramatically the means of communication, multiplied many times the world's means of productivity and substantially improved opportunities for a healthy life. Technology needs to be seen as the major asset it can be rather than as the social threat it has too often been allowed to become. A further area of desirable change is the reassessment of values which has accompanied the developments in technology and in society. This is not to imply that all value changes are healthy and desirable but that there is the opportunity in this reassessment to decide what is of lasting human value in society and to make decisions on the basis of these values. A third area of major potential benefit exemplified by the meeting is the phenomenon of co-operative effort sponsored by Unesco through its regional programmes, in which people everywhere learn to work together to their mutual advantage. There has been a substantial growth in such effort in recent years at inter-governmental level, at government level, through voluntary agencies, through co-operation between interested institutions and individuals. Some of this effort has been misdirected and poorly guided; much of it has been beneficial and effective.

The past pattern of reactions to events has frequently been problem-oriented or even crisis-oriented. Countries have waited for things to happen and then tried to find solutions. The present task is to work together, not just to solve problems, but to prevent problems and to identify more and more possibilities for creative and desirable change.

In the previous section, the needs for change have been identified. Before indicating how these should be met it is advisable to consider carefully the current situation in teacher education. In this, as in other areas of curriculum change, initiatives do not occur in a vacuum but against the context of current activities, decisions, requirements, expectations and resources. Educators frequently make the mistake of not applying their hard-won theoretical knowledge to their own situations. The lessons learned from decades of experience in curriculum development indicate clearly the importance of "situational analysis", a careful stock-taking of the current situation, identifying not only the strengths and weaknesses but also those internal and external pressures which either inhibit or encourage change.

A recent review of teacher-education in the Asia-Pacific region was carried out for Unesco in 1986 and reported in the following year, (APEID, 1987). In 1987, the Inter-Regional Seminar in Brasilia (Unesco, 1988) offered an opportunity to add to this experience, the perceptions of

needs in Africa, Latin America, Europe and the Arab States as well as the expertise of professional bodies such as the World Confederation of Organisations of the Teaching Profession (WCOTP).

B. Major Issues for Resolution

The national papers in the Asia-Pacific study identify a number of issues for resolution, a careful analysis and evaluation of which leads to a coherent programme for future development. That programme needs to take account of initiatives and activities which can help on a regional or sub-regional basis and those which need to be focused at the national level. The issues are grouped under five areas.

1. Teacher Training and the New Contents: Present State and the Emerging Trends

The training of teachers, whether pre-service or in-service, is often considered to be inadequate. Most training curricula do not take into account modern educational ideas based on participation, research and experimentation or on methods of evaluation indispensable for learning-centred education. The impact of the teaching style of the educators of teachers on the teaching activity, is considerable. Furthermore, the traditions of the school, the example of the colleagues the guidelines set by school inspectors, the teaching guides, etc, play an important role. On the other hand, too many changes in the training curricula resulted in some countries in a resignation and absence of motivation on the part of the teachers concerned. A feeling of 'overload of change' is becoming a great problem for any training activity.

The thought given by different sectors of Unesco concerned with the new content of education to the problem of teacher training is reflected in the production of numerous documents featuring (i) the rejection of giving precedence to the training of specialists and the assertion of the need to train all teachers; (ii) information concerning both content and teaching approaches; (iii) a marked predominance of document designed for teachers.

As noted in the Recommendation concerning "education for international understanding, co-operation and peace and education relating to human rights and fundamental freedoms" adopted by General Conference in November 1974, Member States should constantly improve the ways and means of preparing and certifying teachers .. and to this end provide teachers with motivations for their subsequent work: commitment to the ethics of human rights and to the aim of the fundamental unity of the mankind; ability to instill appreciation of the richness which the diversity of culture can bestow on every individual, group or nation" (Unesco, 1974.)

To promote the application of these principles Unesco has created and developed the Associated School system with about 2,000 schools all over the world, where the combination of learning, training, information and action is a reality.

It seems generally accepted that all action aimed at updating teacher training should be governed by a new approach which should be comprehensive, coherent and relevant with respect to the sources of educational content, and that it is more from the side of pedagogical practices that one can expect positive changes. In France for instance, "Projects d'Establissements" or "Projects d'Action Educative" as they call it are blossoming everywhere as an effective initiative of teachers in schools.

For the implementation of innovative pedagogical practices and subsequently innovative training procedures it is essential to have the assistance of organizations and people having nothing to do with education and at the same time improve the sensitivity of school system to all the questions depending on the context of present times. It is the constitution of an inter-institutional tissue of educational activities that is the determinant; more than that it is the recognition by education institutions that knowledge and training are not its monopoly, that the teaching system will be able to contribute to the development of the society. (Unesco, 1988, pp. 6-9)

After reviewing experiences in the countries represented the following obstacles were highlighted:

- the stubborn persistence of traditional curricula
- outmoded systems of education and evaluation of educational programmes
- the poor quality of instructional materials and insufficient input from developments in educational technology
- the poor status accorded to teaching especially teachers at primary and basic levels
- the lack of basic materials and facilities for teaching and learning
- insufficient or irrational allocation of funds to education particularly teacher education
- unnecessary dichotomy between teacher education institutions and the school as well as a dichotomy between pre-service and in-service education
- lack of appropriate reward and recognition for exceptional teachers.

These obstacles were however not considered as insuperable. The more teacher education programmes insist on the dictum that "methodology is the content" with its ramifications for

improved teacher education, and a greater recognition of the status of teachers, the greater will be the hope of overcoming these obstacles.

2. Pre-Service Education

Among the major issues identified in initial preparation is the need to provide good links between schools and training institutions, and equally, good links between practice and theory. This will require a cooperation between schools and training institutions which seem to be rare.

In the schools themselves, the predominant teaching method seems to be didactic and this is often true of the training institutions. The broader purposes increasingly involved in school curricula imply the need for a broader range of teaching approaches. There are at least three different ways in which learning can take place:

(i) by the acquisition of organised knowledge;
(ii) by the development of intellectual and motor skills; and
(iii) by the enlargement of understanding, insight and aesthetic appreciation.

The first method requires a didactic or instructional approach. The second involves learning how to do something rather than learning about it and involves coaching. The third method, where the mind needs to be engaged in the study of individual products and works of merit involves discussion of the ideas, values and forms involved. This is the heuristic or Socratic method of teaching.

A vital aspect for teacher education in all this is its exemplary role. It is vital that teacher education demonstrates the variety of approaches which it recommends, i.e. it practices as well as preaches.

3. Career Development of Teachers

Induction

Students leave their training institutions and go to schools and find themselves under quite different pressures and influences than any they have been accustomed to. They are frequently told to forget what they have learned and concentrate on what is practical. How can an induction process relate their learning from preparation courses to their current experience in a productive fashion?

In-service education

The initial preparation for a teacher is simply a basis on which to build. In what ways can schools and education systems develop career patterns which recognise the needs of teachers to keep learning and growing?

(i) How can we best prepare for continued curriculum change?

(ii) How can we take account of technological development?

(iii) How can teachers keep close contact with their community and with social change?

(iv) How can we increase the skills of self evaluation and the capacity to broaden and deepen continual teaching competence?

(v) How can we meet the needs of particular teachers in the service who have had no prior initial teacher training, such as in the case with many secondary teachers in a number of countries?

(vi) How can we make teachers sensitive to the continuing demands of moral education which are an inescapable part of every teacher's role?

Analyses of the present models of in-service training allow numerous trends to be observed, such as the following examples:

(i) The effort to increase the effectiveness of in-service teacher training includes its integration into a system which combines two other important aspects of lifelong education: the pre-service education of teachers; and the daily experience of their working lives. It is expected that through pre-service training teachers will acquire suitable techniques for their continuing self-esteem.

(ii) Great attention is devoted to the creation and improvement of a system of incentives in order to make in-service training an integral component of the professional life of teachers.

(iii) A growing need is felt for the systematic preparation and further education of those who are involved both in the pre-service and in-service training of teachers.

(iv) Another significant trend is the effort to involve teachers more in the decision-making process concerning the organisation of in-service training courses. Participation in decision-making is more strongly related to school-focused rather than teacher focused in-service courses.

(v) There is an evident tendency to focus the models of in-service teacher training more on the school. However, this does not mean the reduction of the teacher-focused models of in-service training. In the models of in-service teacher training the development needs of the school predominate. But this does not mean that these models should overlook the needs of particular groups or individuals within the school.

(vi) The tendency to try out innovatory methods of in-service training is of increasing importance. This choice reflects new problems which confront education systems and/or society, such as environmental education, health education, international education, computer and information technology and the solution of other so-called global problems.

(vii) Another trend is an increase in the duration of in-service training and mainly concerns the period set aside for the practical application of theoretical knowledge. More profound research on the issues of in-service teacher training and its effectiveness would be desirable. Generally, in-service teacher training serves, either explicitly or implicitly, as an instrument for change both in the education system and in society.

What patterns can be developed for other educational personnel, including headmasters, curriculum advisers, administrators and educational planners? Patterns need to be developed for their continuing education and development.

4. Teacher Education Personnel

Teacher education is a crucial area for educational change and development. Consequently, the personnel in teacher education are vital to the processes we are considering.

The group of teacher educators, because it is adequately educated in most countries and quite small in size, has never had the attention that teachers have. Moreover, there is no other group

that would criticize its shortcomings or offer assistance. The group has to depend on itself for its own improvement. There is a need for a searching look at what exists, what is needed, and what can be done.

An analysis of the situation points up the following:

(a) Little attention has been paid to the preparation of teacher educators. Specific programmes are not commonly available. Wherever these are available, they are inadequate for the high level of responsibility required. The problem is more acute with respect to the preparation of teacher educators for elementary education.

(b) Policies regarding recruitment of teacher educators are not clearly spelt out, neither in terms of required abilities, experience, aptitude nor any other needs arising out of national policies in general. Some examples of the latter are the induction of women or minority groups in respective countries.

(c) As school teaching is a low priority area for able graduates, this, in turn, affects the quality of teacher education.

(d) In some countries, teacher educators are recruited without having any (or sufficient) experience in schools, rendering their teaching bookish and theoretical. Even when recruited with experience in school, they tend to lose contact over time.

(e) While continuously telling teachers to adopt more suitable pedagogy, modern approaches and techniques, teacher educators have frequently kept to 'talk', occasionally supported by 'chalk', communicating in the process that there is one set of ideas for being declared as having successfully completed a teacher education course, and another set of practices for real classrooms.

(f) Joint responsibility for both pre-service and in-service education of teachers, is not very common. Relevant opportunities for learning, evaluation and improvement are thus lost.

(g) Research is not usually considered part of the normal duties of teacher educators.

(h) Induction programmes for teacher educators are frequently absent.

5. Support Services

No teacher education establishment, if it is to be successful in educating and training teachers to serve the needs of both the society and the individual, can function in isolation from the society in which it is located, and the various interest groups within that society. Teacher education establishments exist to help meet the needs of a particular society and a particular school system, and so need to be responsive to that system.

In order to accomplish these tasks and responsibilities it is essential that teacher education institutions be provided with adequate support services in the following main areas: curriculum support materials, personnel (including technicians and clerical support staff) with the range of skills and knowledge required by the training institutions; research and development data; and, modern technological services, along with supply, repair and maintenance facilities.

Curriculum Materials

'Curriculum materials' means all those printed and other materials, including textbooks, posters, charts, audio tapes, video films, etc. which can be used in the education of teachers at both the pre-service and in-service levels. One problem that does occur in this area is that most of the publishing houses produce materials for a mass market, and hence these may not be appropriate in terms of providing an adequate local emphasis. This problem in all three countries has been, in the past, most apparent when teacher educators have had to largely rely upon curriculum materials developed in other countries and regions such as the United Kingdom and North America.

There is a need to develop a greater diversity of materials for use in teacher education because teachers are not educated and trained to work in one type of school or one type of community. For example, the range of skills and knowledge required of a teacher who is going to work in a rural or isolated region is likely to be in many important ways different from the requirements of those who are going to work in inner-city schools; and the professional needs and skills of those who are going to teach in very poor or economically impoverished communities are likely to be different from those who are going to work in more affluent areas. Thus we have a heterogeneous rather than a homogeneous community to cater for. The development of curriculum materials must therefore take into account this important fact. This is an important gap in the production of 'mass' curriculum materials by the commercial publishers. The development of these curriculum materials may be improved in an economically realistic way through some resource sharing and joint curriculum writing and sharing schools and higher education institutions that serve a similar group of teacher education students.

Personnel

The quality of teacher education programmes depends upon the quality of those who are employed to educate the teachers, the educational administrators, technicians and clerical support staff. In many countries, such as Nepal and Thailand, most of the teacher educators are university graduates who may themselves have little practical experience in schools. The reason may be that they are largely selected on the basis of their academic background, and so many of their courses are overly theoretical in nature, and the credibility of the staff involved suffers due to lack of adequate teaching experience.

This situation is not true in all countries. For example, in Australia, with very few exceptions, those who are employed as teacher educators must themselves have a history of successful teaching in schools, plus post-graduate qualifications in their particular area of teaching. However, one problem that does arise, is that once they are appointed to a college of education or university, the staff involved are not required to return to schools to build up further experience and so with the passing years tend to become more and more remote from the realities of the school environment. At a time of rapid educational and social change when schools are in a state of flux such teacher educators may become increasingly out of touch with the realities of the teacher's task.

Research and development data

Research data is essential for the purpose of both planning and programming teacher education activities. It is, for example, necessary to have information on teacher demand both in a general sense and, in particular, subject areas. In addition, it is necessary that training institutions and education departments are aware of the developments that are occurring in schools in order that they can be responsive to these when designing the content and approaches to be adopted in the programmes developed. This is important at the pre-service level, but also at the in-service level in order that courses are developed to upgrade and update the knowledge and skills of teachers.

Research is also required to enable teacher education institutions to evaluate the effectiveness of their programmes in order that they actually achieve what they are intended to do. This is an area which is often overlooked with the result that many teachers claim that their teacher education courses are overly theoretical and incompatible with the realities of the school and classroom.

Technological facilities

Technological development over the past few decades have been such that traditional teaching methods, materials and other support facilities have in some cases changed dramatically. Developments include such technologies as computers, overhead projectors, word processors, calculators, radio, and television. Although these technological developments are available to teacher educators in many of the countries in the region, it must at the same time be remembered that their availability and acceptance is not universal in all countries, particularly those where the material resources are not available to take advantage of these new technological developments.

It is important that teacher education institutions are up-to-date regarding the use of the new technologies, such as computers. This is to ensure that all students are acquainted with the impact of technological developments on their work in the classroom, and to ensure that they have sufficient knowledge in this area to prepare their pupils to take their place in a society where technological change is the norm. Teacher education should also take advantage of technological advances in their own work especially in terms of their impact on the efficiency of teacher education programmes.

C. Summary of Required Changes in Teacher Education

The studies reported above represent the experience of a number of countries, with particular emphasis on Asia and the Pacific, Latin America, Africa and the Arab States. It is important to recognise that the issues and problems identified, however, have much in common with the evaluations of teacher education reported in Australia, U.S.A., and America. As emphasized earlier, we are not dealing with the problems of particular stages of development but with a social and technological context which is confronting very different societies and cultures with similar challenges.

These challenges include the following general requirements.

- Need for greater awareness of effects of social and technological change on expected roles of teachers and schools.

- Willingness to recognise that the future is determined by human choices and not by the mechanisms of technological change.

- Recognition that capacity to use technological change to the benefit of human society requires not only greater knowledge and understanding of technology but of broader social and cultural issues and their relevance to the nature of the society we wish to develop.

- Recognition of the diversity and individuality of human interests and capacities and of the common nature of the social issues with which we must deal as individuals, members of a particular culture and members of a world society.

Required changes include also the following specific areas.

Recruitment and Selection

In many countries, the supply of teachers is still a severe problem while in others a sufficient supply is available in terms of total numbers. In all countries, however, there are shortages of teachers of particular subjects, and shortages of teachers for particular areas. The attraction of the most able people to teaching is a general problem, heightened by the fact that teaching is not a high status profession, in spite of the generally acknowledged value of education as a process. Even in countries with an adequate supply of teachers, current specific shortages exist as already indicated and more general shortages are predicted in the future. The conditions under which teachers work are an important element in attracting people with the ability and commitment to succeed in the more difficult tasks ahead. The conditions include salaries, opportunities for advancement, work environment, community status and increased autonomy. It may also be important to attract to teaching able recruits from different ethnic and social backgrounds. A further element to consider, is the desirability of attracting to teaching some candidates of greater maturity, for example, mothers who have completed their time of child care, and people who have had experience of other vocations.

Selection should include appropriate academic abilities and knowledge but should also possess the capacity to develop as leaders in education. In terms of desirable personal qualities, selection at a particular point in time may not provide valid means. Attention to the development of such qualities may need to be an emphasis in pre-service courses.

Initial Preparation

Common features to be identified in this area includes the need for a core of studies and learning experiences for all pre-service programmes including:

- subject disciplines and other dimensions of knowledge, experience and understanding;
- the organisation of learning: curriculum design and teaching methodology;
- human growth and development;
- theory of education: interdisciplinary, integrated and related to the practice of teaching and learning;
- studies in contemporary culture: society in the national and international settings, social trends, economics, politics ideologies and values;
- methods of inquiry and research;
- practical experience: in classrooms and other community and work environments.

The studies identify a growing requirement to prepare teachers to operate in an interdisciplinary mode. Paradoxically, a pre-requisite for such a mode is appropriate preparation in disciplines. Equal in importance to the subjects studied in the kind of knowledge students have about those subjects. Teachers-to-be must not only know what is held to be true in a given domain of knowledge, but why it is worth knowing, how it relates to other propositions to form a structure of knowledge in a field, and how general problems can be applied to particular problems. That is, they need a sound conceptual grasp of the field, an understanding of characteristic modes of enquiry and skills both in framing problems and in applying the knowledge gained to the solution of problems.

Continuing Professional Development

Pre-service education is to be seen as merely the introductory step into the professional life of the teacher. All the experiences which assist growth as a professional, constitute professional developments. These will include teaching experience, reflection about teaching experience, discussions with others on teaching experience as part of a whole range of informally organised activities. They will also include in-service education, the planned provision of courses to assist professional development - as a major part of formally organised activities.

Increasingly, professional development is seen as an integral part of educational change, rather than merely an optional extra. It takes a variety of forms: formal award courses, non-award in-service courses and school-based in-service activities. In-service needs may be identified at a number of levels: individual teachers, school and systems. Provision needs to be made for each level. The various patterns of provision should be based on research findings on effective development practices.

A major advance in professional development has come with the recognition of necessary links. One link is between pre-service education and in-service education. The involvement of an

institution of higher education in both phases is to the advantage of both: the reality of pre-service education is heightened by the association with practicing teachers and with schools and the theory-practice link for in-service education is strengthened by the continual up-dating which accompanies good initial courses. A further useful link is between the training institutions and the schools. The operation of both sections in a collegial relationship adds to the effectiveness of planning and the commitment of both partners to the implementation.

Major studies which are of value in identifying common patterns of change in teacher education include Coulter and Ingvarson (1985), Department of Education and Science (1983) in the United Kingdom; Carnegie Forum (1985), National Commission for Excellence in Teacher Education (1985), and Holmes Group (1986). (See references for details).

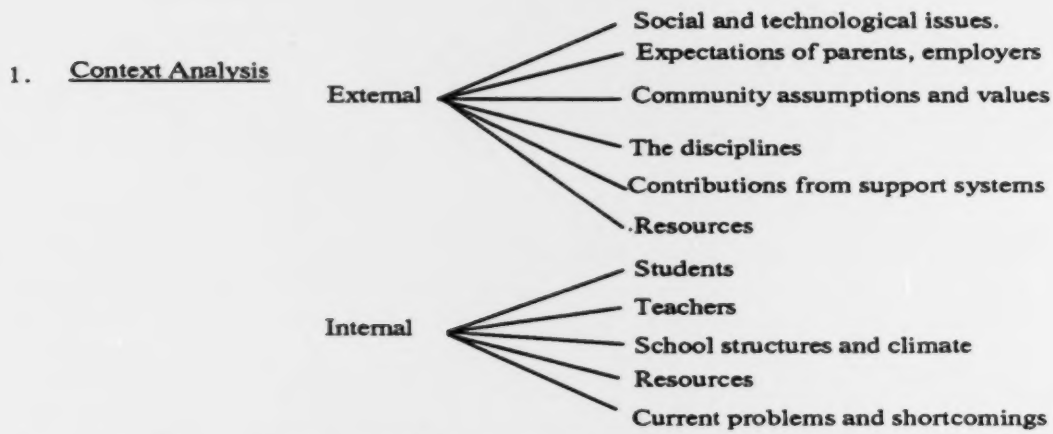
3. MEANS OF RESPONSE

A. An Approach to Planning for Change

The urgency for curriculum change should not blind us to the need for continuity in the means of response. There can be no doubt as to the importance of the social issues which are at the base of the impetus for change: such issues as world peace, care of the environment, the family, health, culture. Yet they are also issues which will in one sense never be solved. Today's solutions have in them the genesis of tomorrow's problems. To add to the difficulty, we may expect quite new issues to develop. The best answer we can hope for is not a final answer, but rather a method by which we can find the most useful available answer. This is true for the school curriculum. It is true also for the curricula for teacher development, at all levels commencing with pre-service education.

A useful pattern which we can adopt for a curriculum response on a continuing base, we shall call the Interactive Curriculum Model. In one sense, this approach makes use of the concept of 'piecemeal planning' developed by Karl Popper. Rather than taking Objectives-Means-Outcome in the classic Tyler fashion, it accepts that this is best achieved through a series of moves to and fro between these stages, in a process of successive approximations or interactions where ends and means are continually defined and refined according to experience. This is less logical and less dramatic than the classic curriculum approach, but offers both a reasonable prospect of improvement and an avoidance of the likelihood of drastic ill effects.

INTERACTIVE CURRICULUM MODEL FIGURE 1



2. Intentions - Aims and objectives, including culminating outcomes, continuing processes, qualitative aspects of experience.
   - preferences, values and judgments about desired direction of educational activities.

3. Programme Building
   - design - content, structure, method, scope, sequence;
   - materials - kits, texts ...;
   - instructional settings;
   - deployment and roles of participants;
   - time-tables

   Learning tasks should be meaningful, economical, structured, inviting, activity-centred.

4. Implementation

   Identification of difficulties. Planning the resources and organisational changes needed.

5. Evaluation and Development

   On-going monitoring permitting changes in objectives and programmes.
   Assessing a wide range of reactions including students, teachers,organisational effects.
   Keeping adequate records based on a wide variety of participants.
   Developing an appropriately wide range of assessment procedures.
   Using available information to develop the curriculum further.

The approach is illustrated in Figure 1. This figure is best interpreted as a list of interacting elements, rather like ingredients in a recipe. What it lacks, and must continue to lack, is a list of directions for mixing. By the nature of this approach, it proceeds by to-and-fro steps, moving from one phase to another, continually adjusting and re-adjusting. It is the curriculum version of Popper's approach.

> "It is the difference between a reasonable method of improving the lot of man, and a method which, if really tried, may really lead to an intolerable increase in human suffering. It is the difference between a method which can be applied at any moment, and a method whose advocacy may easily become a means of continually postponing action until a later date, when conditions are more favourable. And it is also the difference between the only method of improving matters which has so far been continuously successful, at any time, and in any place....., and a method which, whenever it has been tried, has led only to the use of violence in place of reason, and if not to its own abandonment, at any rate to that of the original blueprint."
>
> (Popper, 1966, p. 23)

This is an approach consistent with the behavior of a sensitive and responsible teacher, who values both the integrity of the students and of the content of the teaching and is involved in continuing adjustment and interaction which includes the intentions of those people involved.

The Interactive Approach recognises the contributions made by both the Objectives and the Process approaches and uses these, not in a simple eclectic fashion but in a philosophically coherent way. Firstly, it recognises the value of identifying such curriculum elements as aims and objectives, content, learning experiences and evaluation. It includes a wider view of objectives as including not only 'instructional objectives' but objectives derived from content and others reflecting the importance of particular experiences. Secondly it recognises the artificiality of the division between these elements, convenient for analysis but misleading in practice. It therefore emphasises the importance of the interaction between the elements and the possibility that the starting point may be elsewhere than with statements of intention. Thirdly, it recognises the central part to be played in any such process by the participants or agents. The students, parents and teachers are inescapably included in these agents: the analysis of the wider society and culture on the curriculum shows the existence of still other agents. The nature and roles of the various agents form an important part of a curriculum design.

In deciding where to use this approach, it is consistent to recognise that it implies the use of existing curriculum structure, at school level and for teacher education courses. The approach begins naturally with the existing situation, recognising that it exists as a construct of history and of contemporary culture and is the only logical starting point for this evolutionary approach. It is only as the dynamics of the analysis begin to operate, that intentions begin to emerge which suggest a moderating of the current situation. We need to keep this aspect of curriculum change in mind as we look at three areas of application.

B. Pre-Service Teacher Education

1. Causal Factors for Change

As indicated above the findings of teacher meetings on related subjects are important for the incorporation of new content into teacher education curricula. These include the APEID Regional Workshop (APEID,1984), the Brasilia Seminar (Unesco, 1988), and also the International Symposium on Interdisciplinarity in General Education, organised at Unesco in June 1985 (d'Hainaut, 1986) The report of the latter reinforces the emphasis of the other two, that this new content implies the need for an interdisciplinary approach.

> "In addition to the familiar areas of study, schools are now being asked to address quite different types of topics: environmental education, education and work, education and world peace These are essentially interdisciplinary studies and if they are to be dealt with by schools will require that type of approach." (d'Hainaut, 1986, p.40)

If that is to happen, then teachers will need to operate in quite different ways from their current patterns and from their initial training. This means that initial training must be altered, that in-service approaches must likewise be amended and that teacher educators must also alter their approaches since those approaches in pre-service and in-service patterns tend to be repeated.

These needs set very real problems in the current situation, as is indicated earlier in the paper. The areas of content we have identified are absent from the vast majority of pre-service courses (Unesco,1987, p.21). Further than this, interdisciplinarity in the sense we are using it is not a feature of the preparation of most teachers.

"(Most training curricula) do not take into account modern educational ideas based on participation, research and experimentation or on methods of evaluation indispensable for learning-centred education. As a result, most teachers and activity organizers are unfamiliar with interdisciplinary techniques geared towards actual problem-solving, the evaluation of responses to real situations or problems, and team-work."(Unesco 1987, p.23).

2. Interdisciplinarity

The Importance of Interdisciplinarity

The particular significance of interdisciplinarity used here is that defined by the Paris Symposium.

> "What is interdisciplinarity?
> The most common format for the curricula of general education has been an organisation in the form of traditional disciplines, such as mathematics, science, languages. The pattern being considered is not a move away from the disciplines, but rather their use in a different way.

> The Unesco definition of interdisciplinarity is 'a form of co-operation between various disciplines which contribute to the achievement of a common end'.1 The 1985 Unesco Symposium on Interdisciplinarity in General Education sees that common end as being the improvement of general education, i.e. the period of education from kindergarten to the pre-university level, preceding the move into forms of specialized education or training.
>
> "Interdisciplinarity will thus involve a variety of forms of co-operative effort, invoking the disciplines, to develop and strengthen general education. One form of co-operation is integration, where a number of disciplines are combined within a single boundary to concentrate on a particular theme, such as population education or health education.
>
> Another form is the grouping together of distinct subjects, such as history and geography, into a single entity, social studies. Still another form is the co-operation of various people, including specialists in the disciplines, in the re-conceptualization of the curriculum of general education. A further useful form is the use of integration concepts as the means of organizing an interdisciplinary approach, e.g. such concepts as 'the experimental method'". (1 UNESCO, 1982. Report of the Director-General to the Executive Board on the Preparation of the Medium-Term Plan for 1984-89.)
>
> (d'Hainaut, 1986, pp. 39-40)

The recent emphasis on interdisciplinarity comes from a variety of interacting factors.One factor relates to the way people learn. We see the world as a unity, even though particular disciplines look at it in separate ways. The sciences have their particular modes of description, of analysis, of identification of relationships, of testing and verification. The arts and humanities have their own distinctive ways of viewing and interpreting the world. It is important for us as learners to understand and be able to use these ways but it is equally important to be able to see the world as a whole, developing that broad understanding which is the necessary base for general education. The curiosity of the child is not limited to particular subject divisions and we need to build on this wide-ranging quality. It is important for the development of personal and social interests which again will not be limited to particular subjects.

A further factor in being prepared to look more widely relates to the disciplines themselves. They developed largely in the nineteenth century, from traditional ways of describing knowledge. As growth and development have occurred the old boundaries no longer hold: biotechnology, nuclear technology, space research and computers are some of the areas in which it does not make sense to hold too tightly to the old subject divisions.

A further reason for change lies in the nature of education itself. When education was for a selected few, directed largely towards university education, it was sufficient to use only the traditional divisions for these provide a basis for continued education. With the universalisation of primary education, and increasingly of secondary education, these restrictions are less appropriate. The emphases need to be broader, including not only intellectual but also personal development, not only links with continuing education but also with productive work.

The final reason we will mention relates to the additional areas at which schools are being asked to look: environmental education, education and work, education and family life, education and world peace. These are essentially interdisciplinary studies.

How to approach interdisciplinarity

The Paris Conference on Interdisciplinarity in General Education saw the idea of interdisciplinary studies as being of importance for the range of reasons just identified but felt that the means of introduction of such studies were particularly important.

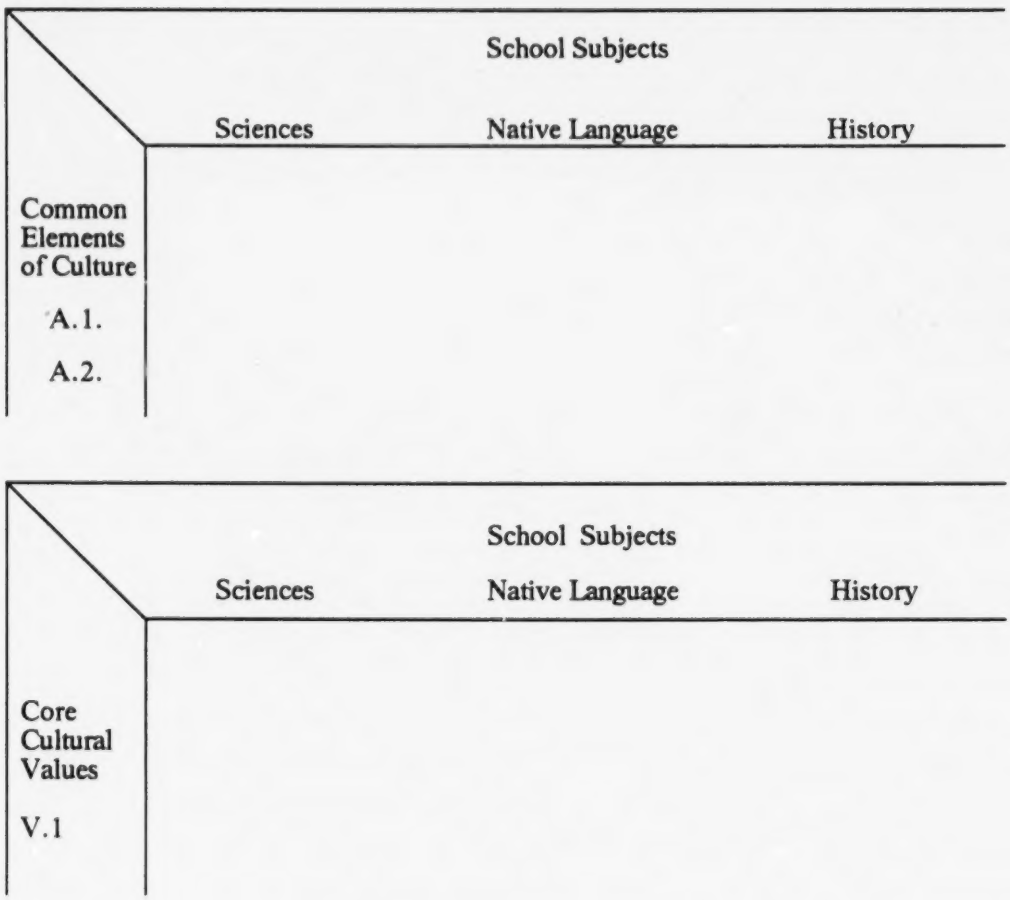
> "The key to the interdisciplinary approach is to recognise it as a process, a way of teaching and learning, and not a product. In particular, it is a way which increases the possibility of transfer of learning from one area of activity to another area. This is an aspect which has been difficult to achieve with the traditional approach, but can be a major advantage of an interdisciplinary approach. The purpose of the introduction of interdisciplinarity is the more effective and efficient achievement of the aims of education. It should not be seen as an end in itself, but is to be judged on its improvement of general education. Where it seems appropriate, the interdisciplinary approach can work within the framework of current subjects. It is in the interrelationships developed, and in the emphasis on links with practical interests, that the major differences will emerge.
>
> It is important to recognize that, while there are significant advantages, there are also significant difficulties. It is not easy to change an existing system, and before this can be done the possible advantages need to be recognized. This may involve substantial discussion with teachers, with community groups in society."
>
> (d'Hainaut, 1986, p. 42)

One aspect of curriculum change which will be even more important under this approach will be the process of evaluation. Curriculum evaluation will be both more complex and more valuable in identifying prtoblems and advantages in the new developments. A crucial task of such evaluation will be to see not only that newly defined aims are achieved, but that the aims themselves remain subject to critical consideration. Also, the role of examinations for entrance to higher education will need to be re-considered. Their role in identification of those who are to continue is still necessary, but this must be done in ways that do not distort the curriculum for the wider age-group.

An interdisciplinary approach does not necessarily abolish traditional subjects but may rather identify ways in which these studies might work co-operatively and ways in which they might help to solve new problems or illuminate new issues. The conference outlined one particular approach in which the traditional subjects could serve as a basis for reconsidering the field of general education.

"There is a significant opportunity to use the interdisciplinary approach as a means of restructuring the curriculum of general education. Social and technological changes have occurred and are occurring at such a rate that the current curriculum needs to be thoroughly reconsidered. A means of doing this, still retaining much of the current framework, is outlined. This implies the need for a co-ordinated effort, involving teachers and other key groups.

FIGURE 2



(i) Develop an analysis of contemporary culture, to provide a comprehensive statement on the common elements of the culture to be included in the curriculum of general education.

(ii) As a part of this analysis, highlight essential values and skills of the culture, identifying the challenges to which each is subject.

(iii) Develop a curriculum matrix in which current subjects are considered in terms of their contribution to common elements of the culture, and core values and skills.

(iv) This can be the means of developing a core curriculum, common to all, beyond which students may follow electives to extend their interests and to allow limited specialization."

(d'Hainaut, 1986, pp. 43-44.)

As the Conference pointed out, changes in teacher education are a necessary co-requisite of any changes in general education. Where those changes involve a reconsideration of process as well as of content, the implications for teacher education become even more important. One aspect of these will be at the pre-service level, but it is equally important to see this as part of a change to the whole field of professional development involving in-service experiences as well.

3. Direct Implications for Pre-Service Courses

New Teaching Approaches in Pre-Service Courses

The most immediate implication for change in pre-service courses is that the need applies to all teachers rather than to some selected teachers. This is obvious at the primary and early childhood levels where the emphasis is on generalist rather than specialist teachers and the arguments developed for change apply across the curriculum. It is equally true however for those trained as secondary teachers. The new content will not be introduced in the form of new disciplines, with new specialists to teach them. It will require the contribution and co-operation of all disciplines, as the previous section on the school curriculum clearly shows.

A further, and equally strong, implication is that the new developments do not only imply new content but new teaching approaches. An interdisciplinary approach is not merely the application of a variety of disciplines to a particular issue, but the relating together of these disciplines to illuminate and resolve problems. These teachers will not only need to develop new relationships with other areas of study but will need to encourage new ways of working for their students. An awareness of this need must appear in training courses.

> ".....the methods by which the teacher is trained must cohere with those which he himself will have to apply, in so far of course as they are appropriate to the level and content of the training of teachers, which is the case where interdisciplinarity is concerned." (d'Hainaut, 1986, p.27)

The development of this interdisciplinary approach could be a powerful method of addressing some of the endemic problems of teacher education. These relate particularly to the separation of theory and practice and the failure to develop appropriate interaction. It relates also to the lack of involvement of the trainees in developing the objectives of their courses. They thus see the courses as not closely concerned with themselves and as being detached from the real world. These are major obstacles to developing an interdisciplinary approach and, more generally, to a high quality teacher education. Specific actions to take account of this situation include the following :

- **Use of real-life situations**

  The teacher education institution would identify actual situations in the community to use as a basis of study. The study could still occur through existing courses, but would involve substantial co-operation, not only in the process but in the outcomes of the study, and particularly in evaluation.

- **Consideration of interdisciplinary as well as multi-disciplinary organisation**

  This would involve two parallel approaches: the interdisciplinary approach would in this case involve adding a special problem-oriented area in the course e.g. current social issues. The multi-disciplinary approach would involve "infusion" of new content and approaches in existing courses. Advantages and disadvantages are identified in Figure 3 on page 36.

- **Negotiation**

  Working with students to identify their current interests and using these interests as a base for negotiating aims and objectives for the courses, and for agreeing on the means of achievement and of evaluation.

  This requires a much greater degree of planning by teacher education staff who will not know in advance the specific starting points and will thus require a much greater range of curriculum materials and resources to be available.

  This can also lead to a reconsideration of the organisation of the course, since the starting -points will depend on the experiences the students already have. It may be necessary to augment this by planning for studies of particular situations. These studies can then become the base on which student groups can formulate the problems and issues more precisely and decide how to pursue them.

  Reviews of curriculum content follow naturally from these approaches and this implies the need for a capacity within the institution for flexibility in response.

Figure 3

Considerations	Interdisciplinary Characteristics	Multidisciplinary (Infusion) Characteristics
1. Ease of Implementation	Easier to implement as a single subject if time permits in curriculum; teacher training is less of a problem.	Requires that more teachers be trained; greater co-ordination of curriculum necessary; requires less time/content in existing curriculum.
2. Teacher Competencies	May require fewer teachers but with more in-depth training in EE; thus teacher training is less demanding in terms of teacher numbers but more demanding in terms of level of competencies required.	Requires that teachers of all disciplines be competent to adapt and/or use EE materials, although perhaps not to the same depth as in interdisciplinary approaches.
3. Demand on Curriculum Load.	Requires addition of this discipline to an already crowded curriculum.	May be effectively implemented with minimal demands on existing curricular load.
4. Ease of Curriculum Development.	Components easier to identify and sequence.	Components must be effectively identified, sequenced, and accommodated by the existing curriculum.
5. Evaluation	A comprehensive evaluation is much easier to accomplish in a single subject curriculum.	Comprehensive evaluation difficult due to the number of variables involved.
6. Age Level Appropriateness	May be more appropriate at secondary than elementary levels. For some types of goals, may be essential at secondary and tertiary levels.	Appropriate at all age levels with some exceptions at secondary and tertiary levels.
7. Effectiveness in Teaching for Transfer.	More difficult to use in effectively teaching for transfer. Requires special efforts to do so.	Teaching for transfer is inherent in this approach when properly used. Infusion permits decision-making to take place in other disciplines in an environmental context.
8. Ability to Provide In-Depth Coverage of Environmental Issues.	Usually more effective due to time available and teacher expertise.	More comprehensive, but requires extensive curriculum co-ordination to achieve in-depth coverage throughout the program.
9. Budget.	Budget consideration entirely dependent on the nature of the course being developed. A highly sophisticated course demanding many field excursions or laboratory equipment could prove costly.	Monetary considerations vary dependent on the nature of the curriculum being developed. Monies required could be greater than in a single subject curriculum due to numbers of receivers involved across numerous grade (age) levels.

- **Variation in Learning Approaches**

  All the above imply the use of a much greater variety of approaches to both learning and teaching. The increased personal involvement of students is a major benefit in itself but this must be complemented by a greater capacity in students in methods of defining problems, developing appropriate approaches, gathering and validating information and evaluating information. The central emphases of this approach are on developing the capacity to reflect about issues and to explore methods of clarification and resolution. Some of these approaches are outlined on Figure 4 on page 38.

- **Evaluation**
- The methods of evaluation used in pre-service courses will be as important as any of the steps taken in deciding on the courses themselves and on how they will be presented. Very substantial changes have occurred in evaluation as a result of deeper consideration of past practices. The changes include the following points :

- Recognition that a major emphasis in evaluation is to use the information obtained and the judgments made to improve the teaching process, i.e. formative evaluation.

- Recognition that the conception of evaluation as the use of information to make decisions or judgments, opens up the possibility of qualitative as well as quantitative approaches.

- Recognition that it is not sufficient to view evaluation as the degree to which the objectives are achieved. It must also involve an assessment of whether the original objectives were worthwhile and were sufficiently comprehensive. This may also include the assessment of the utility of unexpected outcomes.

The following quotation from the Unesco study, (Preparing Teachers for Population Education, Unesco, 1983, pp 31,32,33) is an example of some of the planning decisions made in the area of population education.

> "**Strategies for introducing population education in teacher education programmes** (i.e. mode of inclusion)
>
> An important consideration is the way the curriculum of the teacher education institution is itself organized in fields of study and courses. General education, which embraces curriculum studies, may for instance be organized around separate disciplines: history, geography, economics, law, physics, chemistry, biology, mathematics, and so on; or it may be conceived under broader groupings such as social studies and exact sciences. Similarly, professional training in the socio-psychological foundations of education may be arranged in a single course or in several distinct courses on pedagogy, psychology, sociology, administration and management, and educational technology, etc.

Figure 4 Examples of learning and teaching techniques in terms of the sequence of working.

A - The survey	1. Project (action, communication) → 2. Implementing groups → 3. Pooling of data → 4. Processing, classification → 5. Solution of difficulties encountered (with disciplinary instrumental learning processes where applicable) → 6. Completion in final form → 7. Report, evaluation → 8. Reinvestment of results (in another project, etc.).
B - Problem-Solving	1. Defining the problem → 2. Examining and classifying available data, formulation of hypotheses → 3. Verifiction of hypotheses → 4. Developing a conclusion → 5. Application in other contexts → 6. Report, evaluation.
C - Simulation	1. **Case Study** (Observation of the real world) → 2. **Role-playing** (description of an informally structured group) → 3. **Simulation by gaming** (representation of a structured group) → 4. **Simulation by machine and computer** (integration in a mathematical representation)
D - Gaming used as a stimulus	1. Presentation of the game → 2. Playing the game → 3. Discussion, synthesis → 4. Additional stimuli → 5. Exploitation. →
E - Common techniques and characteristics	Existence of an initial project - General starting-point - Analysis, group-working, experimental workshop, guided interpretation - Instrumental contributions during the procedure (short-duration programming, if applicable) - Intermediate and final syntheses (in increasing degrees of abstraction) - Frequent evaluations - Final inventory of shortcomings and programming of disciplines designed to remedy them - Reinvestment in action (in the direction of problems at a higher level).

Basically, three alternatives exist for including population education: infusion/integration into existing courses; a unit approach; i.e. the incorporation of population education units in one or more existing courses, or a separate population education course:

Unit approach: This involves the incorporation of appropriate population education units into some or all existing courses - both academic and professional. For example, a unit on the main population phenomena and concepts may be included in a broad based course on development so that current issues and problems could be studied in terms of their demographic, socio-economic and environmental implications. Appropriate units on migration could be placed in courses on geography, history, economics (social studies) and a variety of units on family life should find a place in courses on psychology, sociology and biology or physiology according to whether they deal with affective, social or biological aspects. A unit on population education methodology might be included in the professional training courses.

The most important advantages of a unit approach are :

- The relationship of the population content to the rest of the curriculum will be clearer and more direct.

- The different courses into which population units are integrated become enriched and relevant.

- A curriculum modification of an existing course will be administratively less difficult than the addition of a new course.

It should be noted, however, that this approach involves first finding entry points where population units can be logically and meaningfully incorporated into a course; second, working out the new competences to be developed among the student teachers; and third, the adoption of appropriate teaching learning activities and methods for each course separately. It also implies a measure of special training for the teacher educators of the different disciplines into which population units would be incorporated.

Separate course: a distinct course permits a comprehensive and a deeper study of the contents and methodology of population education as well as practice in new teaching roles. It is probable that the innovative aspects of population education will be enhanced by this approach, since young teachers will acquire the concern and commitment, as well as skills required to teach value-laden topics, when they have been able to study the field in a prolonged, systematic way. Where the practice of elective or optional courses occurs, population education might be offered for one or two semesters.

Some specific advantages of a separate course at the teacher education institution level are:

- The logic of whichever population framework is used can be better understood, and thus serve to promote both higher forms of thinking (synthesis, evaluation, etc.) and enhanced later recall of significant learnings.

- As opposed to the unit approach fewer teacher educators will be needed, and thus they can be better selected and trained.

> The best strategy may well be to adopt a combination of both approaches, in the attempt to ensure consistency with the existing programme structure of the institution. (Unesco, 1983, p. 31)

Entrants to Teacher Education Courses

There is a general concern in the region with the supply and quality of entrants in to teacher education institutions. However, there has been a tendency over recent years for standards of entry to be raised and for more specific academic qualifications to be required of applicants. Interviews form an important part of assessment procedures.

It is generally required that all applicants for training have completed secondary school education. There are, however, a few countries that accept applicants from primary schools to be trained to teach at any level of the Primary Schools.

Qualifications in mathematics and science at secondary level are widely required in the countries of the region. While mathematics and science are given importance in recruitment, some countries also place an importance on language competency.

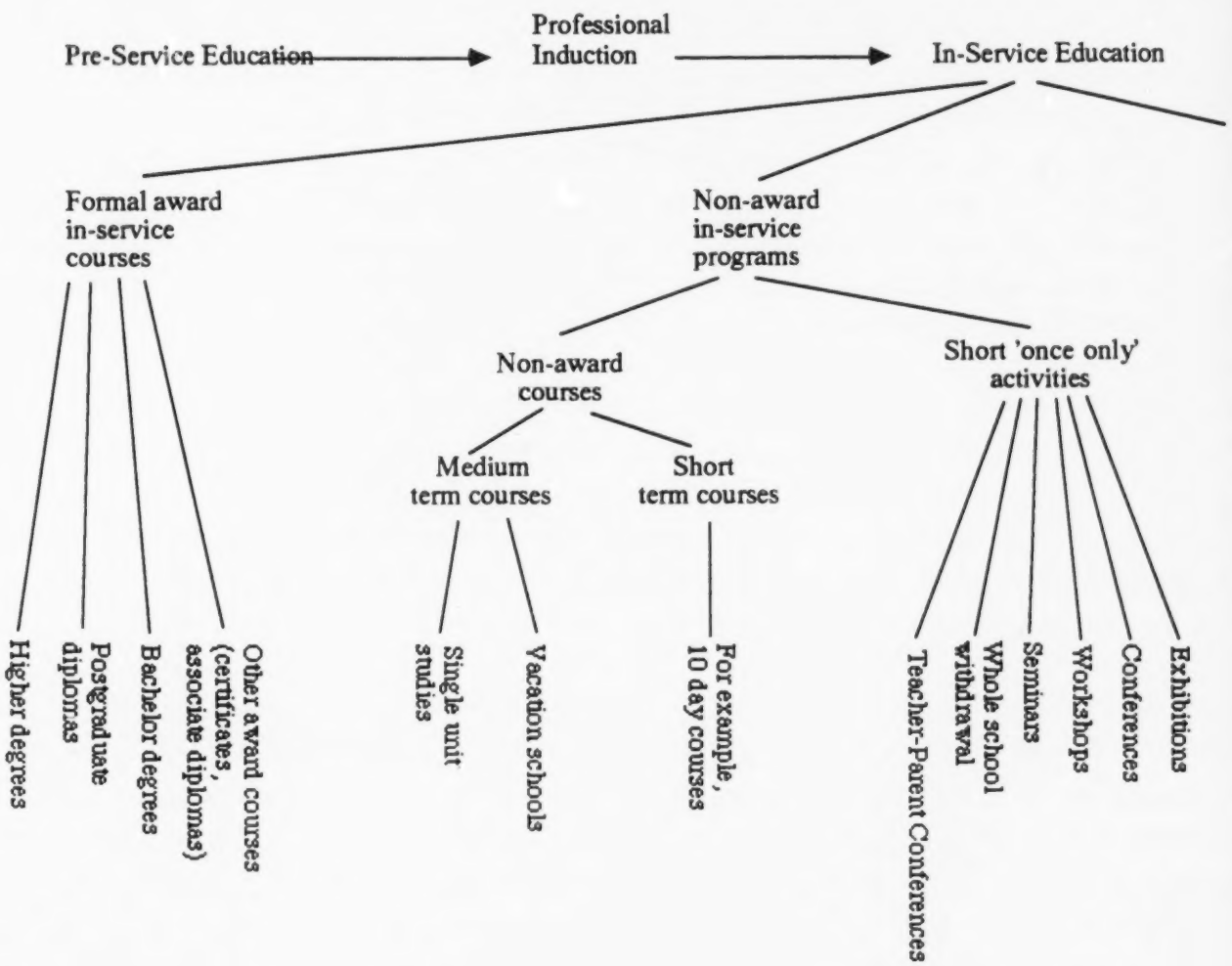
Most countries in the region tend to select candidates for pre-service training on the basis of both academic qualifications and personal qualities, and a small number require work experience. Some countries administer entrance examinations and also require medical examinations before training. It is also noted that there are countries that select candidates on academic achievements only.

All countries have selection procedures during pre-service training, but a few countries are reluctant to terminate students. Supply and demand factors are responded to by changes made in age of entry, level of qualifications and duration of courses. A number of countries have placed considerable emphasis on the personal qualities of entrants, and on their motivations. Much more attention needs to be paid to the outcomes of different entry policies.

C. In-Service Teacher Education

Figure 5 indicates the relationship of in-service education to teacher development as a whole. It also indicates the enormous range of possibilities.

Figure 5 **IN-SERVICE EDUCATION AS A PART OF TEACHER DEVELOPMENT**



1. Providers of Professional Development

School systems are the major suppliers; partly through direct provision of courses, partly through arranging relief for teachers to attend these and other courses. However, teacher development tends to be one of the areas where cuts are first made in times of financial stringency.

Professional associations of which there are many provide their own opportunities for professional development. The associations vary from national bodies to specific subject associations such as the English Teachers Association, and the Science Teachers Association.

Teacher unions likewise may play a role. Their role is, to some extent, ambivalent. They are strongly committed to the idea of professional development for their members but, generally, are opposed to the use of vacations and non-school times for such purposes. They nevertheless, provide a range of activities on their own behalf and encourage activities from other providers.

Increasingly, schools make provision for their own staff in this field. This is done sometimes through funds available from outside and sometimes from the school's own resources. There has been a substantial increase in the emphasis on school-based and school-focused initiatives. The former occur physically on the school premises and the latter, regardless of where they are held, focus on school activities and on issues identified at the school level.

It should be apparent that teachers are now playing an increasingly important role in professional development. This pattern has developed through a growing demand by teachers themselves for a more active role in deciding their own needs. There is still a certain degree of tension between in-service needs as perceived by teachers and in-service needs as perceived by systems. There has also emerged the need to identify differing requirements of teachers at different stages of their careers. It is obvious that a newly appointed teacher or one in the first five years after appointment will have different needs from experienced and capable class-room teachers who are looking for specialized development or for preparation for a more administrative role. The closer involvement of teachers in deciding the nature of the provisions made does, to some extent, make an automatic provision for such different stages.

The universities and colleges play a substantial part in professional development. Some of this is through their regular courses, in particular, the graduate diplomas and the master's degrees. These are available in subject areas, for example, mathematics and computing. They are also

available in professional areas such as curriculum development and teaching methodology. There is a double incentive for the institutions: one is the opportunity to use the staff expertise made available through the reduction in numbers at the pre-service level. The other is the strong desirability of strengthening the links between pre-service and in-service education. The continued experience with schools and teachers which comes naturally through in-service education is a valuable contribution to their work in pre-service education and maintains the credibility of tertiary staff with respect to current practices and thinking. These experiences provide a good foundation for the involvement of the institutions with non-award courses, at their own initiative or at the invitation of schools or employing authorities.

2. Modes of In-Service Education

The most common type of in-service activity is the single event. This takes many forms: a conference, a seminar, a workshop, a visit. The common features are a lack of detailed preparation and a lack of follow-up activities. The purposes are varied: introduction of a new syllabus, consideration of a report, meeting of a professional association. It is the lack of follow-up activity or any planned link to the work-situation which is the weakness of this approach.

A longer occasion offers more scope. The residential conference is one such example. It could take up to five days and offers an intense experience of reflection and discussion, frequently involving substantial preparation and a commitment to develop further activities following the conference. This pattern, because of its expense, tends to be much less common.

The national conference has something in common with the residential conference, but is usually on a much larger scale and less focused in its emphasis. The format for may of them is similar; a few key-note invited papers frequently with overseas presenters together with an increasing variety of other activities: simultaneous papers, workshops, seminars, round-table sessions, post-sessions. There is a very real effort to increase the participation of conference attenders and this has clearly succeeded. The staying-power of the big event, however, the featured speaker, is well established. Most of these conferences require that papers be prepared beforehand and most of them also publish conference reports including the papers and reports on discussions. Subject associations likewise tend to repeat this pattern, with teachers of Science, Mathematics, English, Modern Languages, Social Studies, Art, Music, Commercial subjects, History and Geography, attracting large numbers. Other specialist bodies such as school principals run state and national conferences of broadly similar kinds.

School systems now are attempting to develop more continuity and more work-linkages in their in-service activities. One form is for a group of teachers with a common interest to meet on a regular sequence of occasions, either after school or with release from school. Alternatively, a consultant may work with the staff of a school over a lengthy period. Secondments of teachers to work in a different school for a specific purpose are designed to the same ends, and exchanges between teachers are still another form.

A further mode has developed recently; one that will be considered in more detail later. The pattern is not unlike the pyramid-selling operation, with a group of teachers working together in a highly structured pattern with well-defined purposes. These people then operate as initiating agents with yet another group of teachers.

The operations of the tertiary institutions have extended and diversified substantially. The major pattern of the past was for teachers to enrol in a post-graduate course which usually bore little relation to the teacher's perceived needs. While this pattern still exists, the importance of in-service education to the institutions themselves, is ensuring a more customer-oriented fare. The content and the approach are now much more influenced by teachers' interests. In addition to award courses, a number of non-award courses is made available.

Some of the change in patterns in in-service education over the past twenty years has been for expedient reasons. The increased participation of the tertiary institutions, as hinted, was partly a matter of self-interest. However, both the nature and the mode of involvement have been substantially affected by more worthwhile reasons. One of these is the growing conviction that teacher development is not just an advantageous activity but that it is intrinsically linked to improvement in the schools, improvement in the courses available, in patterns of organisation and discipline, in teaching approaches and the use of facilities and technology. Still another reason was hard-learned in the 1960's, from the comparative failure of the ambitious curriculum reform projects. The lesson learned from this was that it was either useless or counter-productive to make changes to the technical repertoire of teachers, if they remained essentially unconvinced by the underlying rationale. In brief, the major central reason for the important changes lies in the acceptance, throughout the educational community, of the findings from research on adult learning.

3. Incentives and Barriers

The major reason stated by teachers for their involvement in professional development activities is their wish to improve their capacity as teachers. (Docker et al., 1985) However, the patterns of attendance which emerged in the same study shows that activities which led to academic

credit for degrees was markedly more popular than non-credit activities. In a period when promotion is much more difficult, it seems that activities which add to the strength of promotion applications have a special attraction. This use of the in-service activities for extrinsic purposes, however, in no way invalidates the value seen by teachers in activities directed at their area of concern. Job satisfaction remains as a major incentive.

A major block to the occurrence and the success of in-service education is the structural confusion which exists in the field. One factor in this is the stop-start nature of the programs themselves. The pattern, in which programs are introduced, then cancelled and other introduced, develop this process into a rather meaningless exercise. The difficulty in this instance has been the lack of a coherent pattern.

Time poses another set of problems. The time most valued by teachers for professional development is during the school day. This is unsatisfactory to the schools themselves as it requires alternative, and generally less satisfactory, ways of carrying out the teaching. It also is a considerable cost, since relief teachers usually have to be appointed. After-school sessions, weekend sessions and vacation sessions avoid these difficulties but put an extra burden on teachers who value this time for their own preparation and planning, and for their personal lives. The use by schools of pupil-free days has been one attempt to resolve this dilemma. While teachers welcome this approach, parents are understandably less enthusiastic.

A factor related to both issues identified above, is that of finance. The provision of finance from Government has been one of the great stimuli to professional development: sudden changes to this provision have been one of the significant reasons for teacher disenchantment. The need which is less obvious is that for a coherent and continuing policy.

The Education Centres and Teachers Centres have made a substantial contribution to the provision of better facilities for in-service education. Few schools have the types of facilities suited to adult education of this particular kind and their libraries frequently do not offer much in the way of material for teachers. The Centres, on the other hand, frequently have attractive and well-equipped facilities, including excellent libraries. Tertiary institutions, likewise, are usually well provided for this purpose. For schools not within reach of one of these options, there are real problems in mobilising the facilities, equipment and resources for substantial in-service programs. This points to the need for much closer collaboration and coordination between schools, the systems with their service operations and Centres, and the tertiary institutions. The improvement in planning and in increased availability of resources is greatly needed.

The major problem in the area of professional development is the comparative lack of explicit policy and the scarcity of detailed planning. Professional development occurs largely in the context of particular initiatives, for example, in curriculum development or in teaching approaches. Thus, teachers complain of the transitory or episodic nature of many of the initiatives (Docker et al., 1985) with the emphasis being on the implementation of a particular program, currently seen as a priority. This leads also to the lack of a framework for implementation, so that while the initial approaches may be well conceived, there is no mechanism by which they are translated into policies and activities in school. Likewise, the initiatives which occur at the school level often do not link in with policies applying to groups of schools, or the system as a whole. The fundamental emphasis in in-service education is still one of delivery, implying that conveying certain information or resources or techniques will translate into meaningful and coordinated activity in schools. The substantial research on change in education, indicates the fallibility of this approach (See Fullan, 1982.)

4. Creative Developments

A most innovative initiative in teacher development has been the series of programs using the model of the **Early Literacy In-Service Course (ELIC)** . developed initially in South Australia. The prototype was the California-based Bay Area Writing Project. This type of approach specified a particular teaching approach and an equally specific set of teaching materials. In this pattern, those who develop the course prepare an initial group to act as course tutors, with the latter operating in the same well-defined mode with a group of teachers from schools. The schools concerned have to apply for entry and to commit themselves not merely to release teachers for the course itself but to apply a program of teacher action research over a considerable time. This pattern has been very popular with teachers and is now operating in a variety of forms in different areas of the curriculum. Some writers such as Boomer (1987) have criticised the approach as being too top-down in style.

A further pattern has been the Curriculum Workshop, which has the following features:

- the courses arise from requests by teachers and are developed by teams of people from the schools and the tertiary institutions;

- the courses are accredited by the institutions and are thus available to participating teachers towards degrees;

- the presentations start with issues that are important to teachers and introduce theoretical material as the need emerges;

- intensive periods of time are available, for example, the group sessions in some courses consist of three separated weeks of activities, with individual work at other times.

Some school systems are experimenting with approaches which give much more control to individual schools or groups of schools. In this approach, a significant proportion of the available money is passed on to groups of schools or individual schools, so that they can take responsibility for the planning, implementation and evaluation of inservice programs. These would take account of the school's priorities as well as system priorities. Parents, the community and students may be involved in the planning.

A major area where improvement can take place is through better coordination between employers, school and tertiary institutions. At a time of financial restriction, the best possible use of resources is a necessary step. Each of these groups is involved in a variety of activities relevant to in-service education. Employers are involved in curriculum development and in the production of learning resources... schools have their own curriculum development processes and also a variety of activities for staff, including staff meetings ... tertiary institutions are involved in planning and presenting courses. Relating these activities together in appropriate ways can increase greatly their effectiveness.

Equally vital is the implementation of change in a planned fashion, through in-service education. There is no single best solution to the variety of needs and the equally substantial variety of situations. There are, however a number of principles which can be used in planning such activities. Scott, in a recent paper identified ten such points.

> "1. as far as possible, be preventive rather than remedial. For example, planned curriculum or organisational innovations or conversion programs should incorporate envisaged additional teacher responsibilities, knowledge and skills required, and the appropriate strategies for assisting teachers to meet them, as part of the implementation strategy;
>
> 2. be needs focused designed to meet the anticipated or expressed needs of the teachers;
>
> 3. Be determined and planned in consultation with the teachers they are intended to assist ;
>
> 4. be planned and designed to maximise ease of teacher access to the knowledge, skills, insights and so on that they seek;
>
> 5. encompass multiple strategies for delivery of the activities;

6. be development oriented aimed at enhancing the competence of teachers over time;

7. take cognizance of how teachers (as adults) learn and be oriented accordingly;

8. be non-threatening to those for whom the support is intended;

9. provide for evaluation of the efficacy of the support;

10. provide for follow-up maintenance of the support.
(Scott, 1987, pp 24-25.)

For a more comprehensive and coherent approach to be possible, the use of time is vital. It is not possible to meet the various and complex needs by using after school sessions or single day seminars only. It is necessary to think of all the possible modes of operation, and then to plan the activities using time in the most effective way, and using different sources of assistance and consultancy. Some of the possible formats to be included are listed below.

a. Pupil-Free Days. On these days, schools are closed to pupils so that teachers may gather for intensive work. This pattern is frequently adopted on a Friday, so that the Saturday may be used also, which also enables parents to participate.

b. School-based Groups. These meet weekly for an afternoon and evening after school, providing a regular and continuous pattern of operation. These are sometimes used for credit-based study towards a degree, as well as being designed to meet teacher-defined requirements.

c. Intensive Sessions. One pattern for these is the Senior Staff Development Program in Tasmania, where three separate weeks are made available for a particular course, two of them being in term-time with relief teachers being provided, and one of them being in the teachers' vacation-time. These courses require considerable individual study and/or investigation outside the three weeks.

d. Summer Schools. Many institutions are now adopting the U.S. pattern of summer schools. This may take between 2 and 4 weeks in January, and will usually involve individual preparation as well as follow-up sessions.

e. School Staff Meetings. These may involve the use of an hour set aside for this purpose, during each weekly staff meeting. Carefully planned, over a year, this can provide a substantial and useful study.

f. Residential Sessions. Already mentioned briefly, these can be from 2 - 10 days, usually involving relatively small groups in intensive work.

g. Teleconferencing. This may be on a person to person or a network basis, perhaps involving an advisor or consultant, such as a teacher in a lighthouse school.

h. Television . This is scarcely ever used in Australia but offers a variety of possibilities e.g. of interactive television, linking together two groups in separated schools, or the use of non-prime viewing time of the national or commercial networks.

i. Regular Courses at Tertiary Institutions.

j. Teacher -exchange Programs. Which may be sponsored by schools or systems, and may involve exchange between two schools or between a school and another institution, a research bureau, a factory, a university.

k. School Case Studies or School Evaluations. Which could involve studies of the school:
   - by school staff for school staff;
   - by school staff for parents and students;
   - by visiting specialists for school staff;
   - by school staff and parents for the system, etc.

l. Visiting Teacher Fellowships. Appointment of a teacher to a tertiary institution for a semester or year, involving study and/or research.

m. Lighthouse Schools. Selected as one school from a group to work intensively on a special program, or provide information/illustration to the other schools in the group.

n. Advisory Teacher Services. Curriculum services provided through a person given special leave to devote full-time or half-time to working with schools.

The variety is enormous. What is necessary is a suitably creative way of using time and different modes.

Tertiary Institutions

Until the last few years, tertiary institutions have played a relatively minor role. This was largely because they saw their breif as being confined to providing specialist courses in the various disciplines contributing to education, philosophy, history, sociology, psychology and more recently, curriculum, evaluation, educational administration. With the growth in importance of in-service education as a focus for tertiary courses, many institutions are developing more flexibility in the modes of delivery, in the locations, in the timing and in the planning and content of courses. In particular, the perceived needs of schools and teachers are frequently the starting-point for courses, still providing academic credit and requiring appropriate accreditation but seeing their initial emphasis differently. This increased flexibility can offer considerable benefits in providing much more variety, as a base for planning professional development.

The possibilities for improvement in the quality of in-service education lie then, partly in the recognition of the variety of needs and situations to be taken account of, and partly in the recognition of the variety of partners and processes to be used in planning. The major requirement in all this is to take the task seriously: to recognise the crucial importance, to recognise the nature of the learning involved and of the various participants, and to include these participants fully in planning, implementation, evaluation and continued development.

EVALUATION

In an earlier section, we identified the major role to be played by the new conception of evaluation in assisting the reformation of pre-service teacher education. This applies with equal force to the whole area we are considering. If we are to bring about substantial changes in teacher development at any level, the constructive use of evaluation will play a major role.

Evaluation has always been a powerful instrument in education. Too often, its power has been exercised mainly in negative and constricting fashions. The hopeful quality about the new conception and the new approaches, is that they can link teachers together in a more constructive and creative role. That role will be vital in the task we have identified.

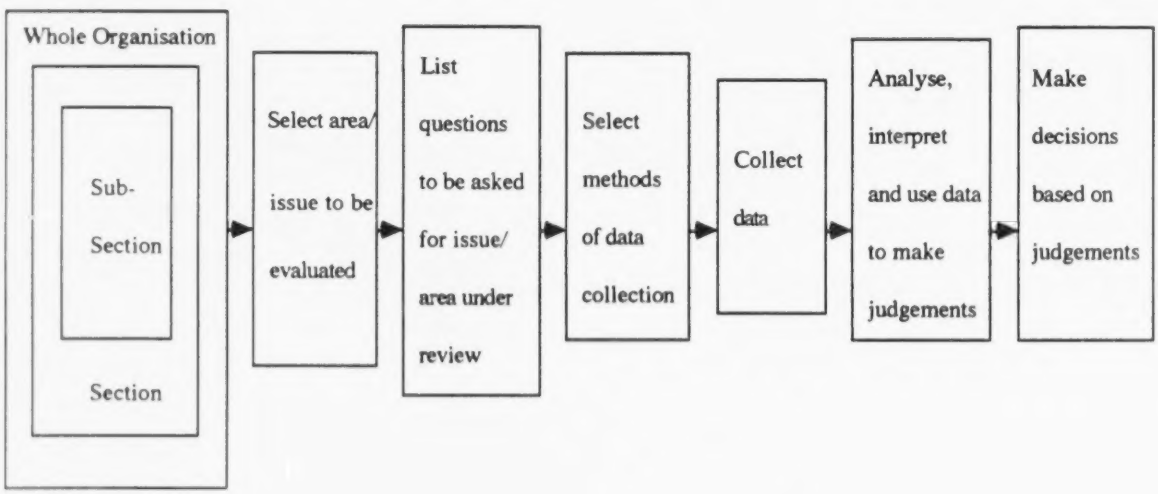
In any organisation the pattern of operation is likely to have been determined by a number of factors - the particular enthusiasms and expertise of present or past members of staff, the physical and social environment, the influence of other organisations and people, the financial resources, and, of course, the explicit purposes of the organisation. It will not suit everyone,

and it will be continually changing. However, it is important not to think of evaluation as merely monitoring change; as something which occurs after a decision has been taken. Rather, it is a basis for proposing changes - how change is introduced depends upon what is already in existence. Evaluation is an integral part of the operating process. It may operate informally and intuitively, or in organised ways - but it is always a reality.

The value of evaluation lies in its ability to help clarify the issues facing an organisation and to help people make informed decisions. These decisions are often made on an informal, intuitive basis, rather than in a more formal manner. While there is no denying the value of this approach, it can be usefully supplemented by more systematic procedures.

The following diagram outlines the major steps in evaluation. It is merely intended to give an overview of the evaluation process. Many of the steps inter-relate and all can be modified or adapted to suit the needs of a particular organisation. In practice there will need to be many other connections between the steps here. The order suggested is a logical one but there will be many moves, backwards and forwards.

AN APPROACH TO EVALUATION


Whole Organisation
Sub-Section
Section
Select area/ issue to be evaluated
List questions to be asked for issue/ area under review
Select methods of data collection
Collect data
Analyse, interpret and use data to make judgements
Make decisions based on judgements

A. INTRODUCTION TO EVALUATION

1. What is Involved in Evaluation

In general terms, evaluation can be thought of as a process which utilises information to make judgements and decisions. This process involves:

- careful consideration of what information is needed before action is taken;
- gathering of as much relevant information as possible;
- using this information to make judgements;
- making decisions based on these judgements.

Recent public debate on alleged inefficiencies in public organisations seems to underline three questions:

How can organisations develop procedures to improve the value and relevance of their own programs and procedures?
How can organisations inform the public that what they do is worthwhile?
What is the place of formal assessment of individuals and operations?

Each of these questions uses evaluation in a particular sense:

- for program improvement;
- for accountability;
- for selection, promotion or devedlopment.

2. Possible Approaches to Evaluation

A variety of approaches may be taken when evaluating. Three approaches commonly used are:

a. Evaluation by internal staff

Staff alone undertake the evaluation, possibly following some form of guideline or checklist, or using knowledge gained from books or inservice courses.

b. Evaluation by internal staff with help from an external facilitator

The staff plan, implement and control the evaluation, making necessary judgements and decisions. The facilitator helps them design and implement the evaluation, offering added expertise and resources where necessary.

c. Evaluation by external evaluator(s)

Staff provide information for evaluator(s) who come in to carry out an evaluation. Staff may be required to provide an initial internal evaluation report. The evaluator(s) may be department personnel, specialists from the public service board, staff from a university or C.A.E. or a combination of these.

B. THE SOCIAL CONTEXT

While evaluation is a worthwhile and useful activity for those who want to look at issues, solve problems and generally determine whether they are offering the best service available, it should not be undertaken without careful thought and planning.

Before contemplating evaluation on a large scale, it is important to consider the social and organisational context, particularly with respect to group interaction and communication.

An evaluation may be carried out for a variety of reasons. There is likely to be more than one source of motivation and different people involved may be participating for different and even conflicting reasons.

The following have been identified as possible motives for conducting an evaluation:

(i) An interest in improving the service and making a better job of meeting the needs of the public.

(ii) A desire to examine the effect or or problems introduced by new programs or organisational changes.

(iii) A concern to justify or give a 'stamp of approval' to current practices in the face of criticism from the public or some other source.

(iv) A response to internal dissatisfactions with procedures, conveyed through colleagues or associations.

(v) A response to external pressures from other parts of the system for an organisation to given an account of itself or of some specific set of activities.

(vi) A fuifilment of an obligation to report on the use of finance.

(vii) A desire to settle conflict, e.g. personalities, power, roles.

(viii) An evaluation requested by a Government Minister, or Cabinet.

(iv) A desire to review the implementation of new policies.

Obviously, there can be conflicting motives. Unless structures are established to facilitate interaction and free-flowing discussion prior to evaluation, there is a danger that the benefits of evaluation will be eroded by unresolved conflict.

Thus, there is a need to be aware that staff require time to develop 'group' skills such as the ability to understand the behaviour and motives of others, the willingness to adapt one's own behaviour to the needs of the group or the task in hand, and the ability to reflect before undertaking an evaluation.

C. CHOOSING AN AREA OR ISSUE TO BE EVALUATED

You may be clear in your mind as to the area or issue you wish to evaluate, but other staff members may have different ideas.
An essential aspect of an evaluation is that all those involved agree on the issue involved, and the organisational setting of the evaluation.

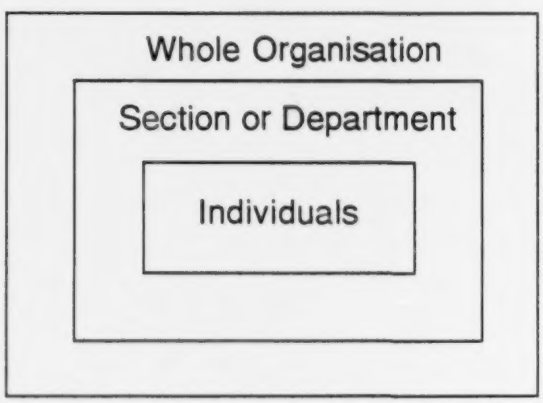
D. LEVELS OF EVALUATION

Having identified an issue for evaluation, it is often helpful to classify it according to the context in which it appears.

In organisational evaluation, three levels can be identified:

1. Evaluation at the individual level - this may arise from special needs of certain people.
2. Evaluation at the department or section level.
3. Evaluation of the whole organisation - i.e. as a whole, the overall provision for the well-being of staff, the relationship with the community, the adequacy of resources, the relevance of purposes.

The distinction between the three levels is only for convenience and does not suggest that decisions made at one level do not affect what is going on at other levels. Clearly, there is a close linking between levels; what is done in one class affects the whole to some degree and vice versa (represented by the following diagram).



Consider the issue you have chosen to evaluate. At what level(s) will you be evaluating?

E. SETTING CRITERIA FOR EVALUATION

Having determined the area or issue you wish to evaluate, it is important to be clear about the criteria you will use when evaluating. Obviously the criteria you choose will depend upon the area under investigation. It is important to clarify criteria before selecting your evaluation methods. If not, you will be collecting information without a focus.

In the case of a program evaluation, the three main elements with which you are concerned are the existing program, the intentions of the people involved with it and the outcomes.

The word 'intentions' is used to avoid arguments about whether the statements should be in terms of aims, goals, objectives, processes, outcomes etc. For the present purpose, it is only necessary to attempt to state what the organisation is trying to do for its clients; this in itself is an ongoing task with statements always being revised and modified.

Looking at the three elements:

It is tempting to link one to another with arrows from left to right suggesting that one leads to another. It is only in the artificial state that we can define these separate steps taken in order. In reality, things are not so simple. There is a continuous cycle of events which make things appear to be all going on at the same time. The steps inter-relate and feed each other; sometimes we only become aware of intentions by examining what we do; sometimes we only find out how to provide opportunities for certain kinds of achievement by noticing that they coincide with particular experiences. The order suggested should, however, influence the thinking and reasoning about the selection, gathering and use of information.

These elements of concern tend to be subsumed by the requirement for information about

WHAT IS BEING DONE

so that decisions can be made about improvement using criteria which come from considering

WHAT OUGHT TO BE DONE

However, to do this, it is helpful to clarify first the intentions you have concerning the area under review. The next step is to decide what questions should be asked about the chosen aspect of the organisation.

Example: The Registry of Births, Deaths and Marriages provides a variety of client services. It is decided to review the services of the Registry to various government and government-sponsored agencies. What questions would you ask?

Setting Criteria for this Evaluation

1. What will be the composition of the review team?
2. Are the terms of reference clear to all involved and accepted by all involved?
3. Which sections of the department under review will be considered.
4. Who are the 'clients' of the department, individuals and groups ?
5. What does 'quality' of service mean to the various clients?

This list of key questions will served as a focus for the collection of information.

F. EVALUATION CHECKLIST

There is no single best way to evaluate.
There are, however, some commonsense questions which should be considered when planning **any** evaluation. The following questions were developed with this in mind. They are intended to be memory-joggers, to help you in planning your evaluation. They are not intended to be prescriptive, and should be adapted to suit the needs of your particular situation.

Read through the following questions:

1. Purposes

What are the purposes of the evaluation?

Are they expressed in specific terms, e.g. improving morale?

Are the purposes understood by and acceptable to all those concerned?

Who is likely to oppose the evaluation?

2. Motivations

Why is the evaluation being undertaken now?

Will the evaluation meet a felt need of those involved with the organisation?

Who wants to be involved in the evaluation?

Who should be involved:

- Director?
- Senior Staff?
- General staff?
- Those with a vested interest, e.g. clients, other departments
- Others

3. Participants

Who will carry out the evaluation:

- Senior staff?
- General staff?
- Clients?
- Representatives of an outside body - e.g. consultant, people from another department.
- a combination of the above.

What will be the nature of the involvement of various participants? Will there be a representative planning team or steering committee? Is the evaluation likely to be seen as threatening to any of the participants?

How can any perceived threat be minimised?

4. Evaluation Roles

There are a number of possible roles (not necessarily separate people).

- **Evaluator** (one involved in information collection and judgement)
- **Facilitator** (one involved in assisting an evaluation but not in judgement)
- **Consultant** (a person called on for special contributions to one or more aspects, e.g. assisting with interviewing only)

To what extent are such roles used in the evaluation?

Is the evaluation organised in a realistic fashion for the people involved, particularly with respect to:

- **time** (to obtain valid results, to maintain interest, time for organisation)?
- **personnel** (is the central figure organising or co-ordinating the evaluation being given time release for the activity?)?
- **finance**?

What is the time span of the evaluation?

5. Intended Audiences

Are the audiences of the evaluation clearly defined? What access to information will the various audiences have?

6. Area/Issue to be Evaluated

What will be evaluated:

- appropriateness of goals?
- extent to which goals have been achieved?
- processes, e.g. interaction with clients, interaction with public, planning procedures, accounting?
- strategies?
  public relations?
- staff development?
  reporting?

7. Collection of Information

Available methods include:

- observation - structured or unstructured
- interviews - structured or unstructured
- questionnaires
- documentary analysis of reports, records, minutes etc.
- content analysis of program materials
- reports of informal discussions and conversations
- achievement tests - criterion and norm-referenced
- diaries and self-reports
- audio and video tape recordings

Are there appropriate safeguards to ensure that the information is valid and reliable?

8. Feasibility of Methods Used to Collect Information

In terms of:

- time available
- availability of personnel with the necessary expertise
- acceptability to those whose views and activities will be documented.

9. Judgements

What are the procedures for the analysis of information?

How will the information be categorised?

Are there appropriate safeguards to validate the information?

10. Release of Information

Who will have control over what is collected and reported?

What procedures will govern the collection and release of this information?

Who will have the right to reply to, correct and validate reports of the views and activities of individuals and groups?

Will all, or only part of the information be released?

Is the evaluation going to be reported in a form (content, style and format) which is readily available to those for whom it is designed?

Will negative aspects be reported, and to whom?

Has the release date for reporting been identified?

Are different reports for different groups necessary?

11. Outcomes

Is it possible to see or to predict positive outcomes from the valuation?

Have these outcomes been identified clearly?

What steps have been taken for ensuring that the evaluation feeds into the appropriate decision-making process?

Are the participants aware from the beginning of the possible outcomes?

Have follow-up procedures been established to make participants aware of the actual effects of the evaluation?

12. Resources

Are particular resources needed to make the evaluation more effective:

- specialist personnel?
- secretarial assistance?
- administrative personnel?
- equipment, paper,postage?

- working space?
- time available for those staff conducting the evaluation?
- printing and media production?
- example of evaluations undertaken by other bodies?
- planning guidelines?

G. WRITING AN EVALUATION REPORT

Before attempting to report on evaluation, it is essential to consider all possible audiences ... who **needs** to know and who **wants** to know? It may be necessary to write separate reports for different audiences, e.g. the head of a department will want to know specific results relating to his/her department, whereas others may be satisfied with an outline of general findings and the trends these indicate.

It must be remembered that the evaluation report is just one step in a process which aims to **improve** effectiveness and efficiency. It is not a final and conclusive statement. It is important to consider the purpose of the report. Is it to detail what happened during the evaluation? Provide an audience with information? Outlines a course of future action? A comprehensive report should cover all of these although it does not have to go to great lengths to do this. People often expend large amounts of energy writing lengthy evaluation reports, but the question remains - is the weighty report of greater value than a lighter version which still provides information, a description of the study, results and recommendations for action, and has been far less gruelling to write?

There are a number of key areas which should be included in a report:

1. Introduction
2. Contextual information
3. Description of evaluation study
4. Results
5. Conclusions and recommendations for further action.

1. Introduction

It is useful to include a summary of recommendations for future action in this section - to catch the eye of those who only skim reports!

2. Contextual Information

To put the evaluation in a context, it is important to give a brief overview of the issue/area under review, e.g. the origins of a program and its aims, a description of the people involved, and the

types of resources used. The organisational setting, with its external and internal links, is an important aspect.

3. Description of Evaluation Study

Two key questions are implied here: what was the purpose of the evaluation and how was it carried out?

(i) To draw out the purpose of the evaluation. The following questions are just a few of the many which can be addressed:

- who wanted the evaluation to be carried out?
- what type of evaluation was it?
- who was (were) the audience(s)?
- what was the information required for?
  e.g. decision-making purposes.
- what were the limitations of the evaluation study?

(ii) A description of the 'mechanics' of the evaluation might include such aspects as:

- a description of the issue/area under investigation.
- an outline of the procedures followed, e.g. timeline.
- a list of the criteria used.
- a description of the data collection techniques used, reasons for their selection and the limitations or deficiencies of particular techniques.

4. Results

Results are only a means to an end, and so should be presented in a clear and straightforward manner to enable all readers to come to grips with them. Some form of initial summary may help the reader to see major findings at a glance.

When presenting results, it is useful to remember that some people only read the text and some only the graphs and tables, thus both should be self-explanatory. Graphs are easier to read than tables for most people.

When analysing results it is important to consider if these results are only attributable to the issue/area under review, e.g. a new approach to organisation: is this the cause of change or are there other influential factors in the situation. You must also clearly indicate which results are directly observed facts, and which are based on personal interpretation.

5. Conclusions and Recommendations

This is the most vital section of the report, drawing together findings and outlining a plan of further action. Far too often, the report is displayed for proving a particular point, or for accountability purposes, and then filed in a cupboard to be quickly forgotten. If this does happen, the evaluation loses its credibility, people who have put in the necessary effort once are

unwilling to co-operate again, and you have a situation where evaluation becomes little more than a 'once-only' activity.

By producing a brief and readable document, you are half-way to ensuring that this does not happen - a summary of major recommendations at the beginning helps. Furthermore, clearly set out conclusions and recommendations provide you, other evaluators, department officers, etc. with guidelines for action. It is important to couch recommendations in 'action' terms to ensure that further action will be taken.

Recommendations can relate to two aspects of the evaluation:

(i) **The area/issue under review** - drawing out its strengths and weaknesses; areas which should be built upon, those which should be rejected, e.g. a new program may have a higher success rate than the old but may cost more. Thus, one course of future action would be to devise new ways of presentation, which retain the advantages but at lower cost.

(ii) **Further evaluations of the area/issue**, e.g. in your initial evaluation you may feel that you neglected certain areas, while devoting time and energy to others which did not require the attention; or that particular techniques were not as useful as others may have been to collect information; or that you would want to collect more information from a wider variety of people in future; or that it would be easier to write evaluative comments during a program, and modify procedure, accordingly. It is useful to make such recommendations to save time and energy in future evaluations.

H. PRESENTING THE EVALUATION REPORT

The written report is the most common way of presenting evaluation findings, but verbal and video presentations should also be considered.

If you are presenting a written report, start with the most important information, an initial summary of recommendations for further action; make extensive use of key and descriptive headings, and above all, state the report in the simplest and most direct manner.

A verbal presentation is a viable alternative, and can be made interesting and varied by using such devices as slides, an overhead projector, graphs, question and answer sessions, panel discussions, etc. It is important to involve your audience, e.g. seating arrangements; encouragement of two-way discussion. Even if you have a written report, it is useful to prepare an oral presentation also.

A more frequently used format recently is the slide, video or film report. These can be successfully used in conjunction with verbal and written reports, e.g. you could film various aspects of the program considered to highlight its features. After showing the film (or slide sequence) to various audiences you can discuss the salient features of the program with them,

seeking advice, interpretations of your findings, and recommendations for further action to improve the program. At a later date a brief written report, outlining in detail these conclusions and recommendations, may be appropriate.

As we have discussed, evaluation is not just a post-script to course development, but a continuing part of the process. The fundamental changes envisaged at all stages of teacher education, to meet the challenge of the present and future, will require a creative and constructive use of evaluation.

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